

Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville: an Ethnographic Study of Traditional Subsistence Salmon Harvests and Uses

by

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Division of Subsistence



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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative		fork length	FL
deciliter	dL	Code	AAC	mid-eye-to-fork	MEF
gram	g	all commonly accepted		mid-eye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.	Mathematics, statistics	
meter	m			all standard mathematical	
milliliter	mL	at	@	signs, symbols and	
millimeter	mm	compass directions:		abbreviations	
		east	E	alternate hypothesis	H _A
Weights and measures (English)		north	N	base of natural logarithm	e
cubic feet per second	ft ³ /s	south	S	catch per unit effort	CPUE
foot	ft	west	W	coefficient of variation	CV
gallon	gal	copyright	©	common test statistics	(F, t, χ^2 , etc.)
inch	in	corporate suffixes:		confidence interval	CI
mile	mi	Company	Co.	correlation coefficient	
nautical mile	nmi	Corporation	Corp.	(multiple)	R
ounce	oz	Incorporated	Inc.	correlation coefficient	
pound	lb	Limited	Ltd.	(simple)	r
quart	qt	District of Columbia	D.C.	covariance	cov
yard	yd	et alii (and others)	et al.	degree (angular)	°
		et cetera (and so forth)	etc.	degrees of freedom	df
Time and temperature		exempli gratia		expected value	E
day	d	(for example)	e.g.	greater than	>
degrees Celsius	°C	Federal Information		greater than or equal to	?
degrees Fahrenheit	°F	Code	FIC	harvest per unit effort	HPUE
degrees kelvin	K	id est (that is)	i.e.	less than	<
hour	h	latitude or longitude	lat. or long.	less than or equal to	?
minute	min	monetary symbols		logarithm (natural)	ln
second	s	(U.S.)	\$, ¢	logarithm (base 10)	log
Physics and chemistry		months (tables and		logarithm (specify base)	log ₂ , etc.
all atomic symbols		figures): first three		minute (angular)	'
alternating current	AC	letters	Jan,...,Dec	not significant	NS
ampere	A	registered trademark	®	null hypothesis	H ₀
calorie	cal	trademark	™	percent	%
direct current	DC	United States		probability	P
hertz	Hz	(adjective)	U.S.	probability of a type I error	
horsepower	hp	United States of		(rejection of the null	
hydrogen ion activity	pH	America (noun)	USA	hypothesis when true)	α
(negative log of)		U.S.C.	United States	probability of a type II error	
parts per million	ppm		Code	(acceptance of the null	
parts per thousand	ppt, ‰	U.S. state	use two-letter	hypothesis when false)	β
			abbreviations	second (angular)	"
			(e.g., AK, WA)	standard deviation	SD
volts	V			standard error	SE
watts	W			variance	
				population	Var
				sample	var

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**CHIGNIK BAY, CHIGNIK LAGOON, CHIGNIK LAKE, AND PERRYVILLE:
AN ETHNOGRAPHIC STUDY OF TRADITIONAL SUBSISTENCE
SALMON HARVESTS AND USES**

by

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ABSTRACT

Healthy salmon stocks are a vital component to the continued subsistence practices, food security, economic stability, and therefore the cultural continuity of the Alaska communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville. Subsistence salmon fishing provides substantial quantities of food to all community residents, ties extended families and neighbors together, creates bonds between adults and children through the continued transmission of knowledge, and perpetuates connections between individuals and the natural environment. This report describes contemporary subsistence salmon fishing practices, illustrates how subsistence fishing is important to the study communities, and explains what factors influence how fishing practices change over time. This report will ideally serve as a guide for fisheries managers to understand contemporary fishing practices, traditional ecological knowledge, and the importance of subsistence salmon fishing to the residents of Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville.

Key words: Chignik, Chignik Lake, Chignik Lagoon, Chignik Bay, Perryville, Alaska Peninsula, subsistence, salmon, salmon fishing

1. INTRODUCTION

This report describes the results of an ethnographic study investigating the harvest and use of salmon by residents of Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville. These are the contemporary communities of the Chignik Management Area (CMA) located on the Alaska Peninsula in Southwest Alaska. The Alaska Department of Fish and Game assigns titles to defined geographic areas within the state in order to properly manage each area's natural resource use. The CMA is located on the south side of the Alaska Peninsula, approximately 250 miles southwest of Kodiak. In the CMA, virtually all area residents participate in harvesting salmon and using salmon. Social science research methods were used to examine the various strategies used by local families in deciding when and where to fish, who to fish with, what gear to use, and how much to harvest. The data collected during this project provide essential context for the interpretation of harvest data, the understanding of community patterns of subsistence use and adaptation, and effective management of salmon fisheries.

Previous subsistence research conducted by the Division of Subsistence in these communities first occurred in 1984 and 1985 (Morris 1987). Then in the early 1990s, the Division of Subsistence conducted detailed research on the patterns of subsistence uses of fisheries resources in the CMA. The research findings are summarized in Hutchinson-Scarborough and Fall (1996). More recent updates with more detail on subsistence uses of salmon by Perryville residents are also available (ADF&G 2002; Fall et al 1986; Fall et al.1995; Fall 2006). This ethnography project is similar to what was done in 1990 that focused on the subsistence salmon fisheries in the communities of Chignik Lake, Chignik Bay, Chignik Lagoon and Perryville. In addition other ethnographic research has been conducted by independent anthropologists in 1984–1985 and in 1990 (Davis 1986; Partnow 2001).

PARTNER ORGANIZATIONS

This research was carried out by the Alaska Department of Fish and Game (ADF&G), Division of Subsistence with major funding provided by the Alaska Sustainable Salmon Fund (AKSSF). Additional project partners and supporters included the Bristol Bay Native Association (BBNA), and the village councils of Chignik Lake, Chignik Bay, Chignik Lagoon, and Perryville. Each village council provided the researchers with a resolution of project support and local research assistants to aid the principal investigators with data collection in each community.

GEOGRAPHIC AND DEMOGRAPHIC DESCRIPTION OF THE STUDY AREA

Figures 1-1–1-3 show the location of study communities on the Alaska Peninsula and within the CMA, and detail prominent drainages and features of the Chignik River Watershed. The CMA encompasses all coastal waters and inland drainages on the south side of the Alaska Peninsula from Kilokak Rocks at the southern entrance to Imuya Bay at lat 57° 10.34'N, long 156° 20.22'W, then due south to Kupreanof Point at lat 55° 33.98'N, long 159° 35.88'W (5 AAC 15.100) (ADF&G 2011–2014). Within the CMA geographic boundaries there exist 5 established communities, however according to area residents, Ivanof Bay did not have a year-round population from 2010–2012, and therefore was not part of this study. Table 1-1 lists the population history of the 5 communities in the CMA Chignik Bay (also called “Chignik”), Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay (Table 1-1). Between 1980 and 1990 the area population was relatively stable, peaking in 1990 with a total population of 518 people. By 2010, the combined year-round population of all CMA communities totaled 362 people (U.S. Census Bureau 2011), a 31% decline over this 20-year period. Significant changes in the cost of living, availability of employment and resources, changes in the commercial fishery, and accessibility to transportation have all contributed to a declining population. These changes and the declining population in the CMA communities will be discussed throughout this report.

Table 1-1.—Population and occupied household data, Chignik Management Area communities, 1980–2013.

Community	United States Bureau of the Census ^a											
	1980			1990			2000			2010		
	Total population	Alaska Native population	Percentage of total	Total population	Alaska Native population	Percentage of total	Total population	Alaska Native population	Percentage of total	Total population	Alaska Native population	Percentage of total
Chignik city (Chignik Bay)	178	53%	188 ^d	79	45%	61%	91	41	57	62%		
Chignik Lagoon CDP	48	85%	53	103	57%	83%	78	29	63	74%		
Chignik Lake CDP	138	89%	133	145	92%	88%	73	27	70	96%		
Ivanof Bay CDP	40	93%	36	22	94%	95%	7	2	100	100%		
Perryville CDP	111	93%	108	107	94%	98%	113	38	96	97%		
All communities	515		518	456			362	137	386			
Alaska Department of Fish and Game Division of Subsistence household surveys ^b												
Community	1984			1991			2003			2011		
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Households	Households	Estimate	Estimate	Percentage of total	
Chignik city (Chignik Bay)	121	120	128	78	29	77	26	46	60%			
Chignik Lagoon CDP	74	41	—	70	22	61	23	45	74%			
Chignik Lake CDP	156	112	131	111	31	92	27	90	97%			
Ivanof Bay CDP	37	32	—	—	—	—	—	—	—			
Perryville CDP	115	116	—	121	33	101	98	34	98%			
All communities	503	421	259	380	115	331	110	279				
Alaska Department of Labor and Workforce Development estimate ^c												
Community	2011			2012			2013					
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	
Chignik city (Chignik Bay)	98	90	92	78	76	7	7	7	7	7	7	
Chignik Lagoon CDP	79	82	78	70	70	7	7	7	7	7	7	
Chignik Lake CDP	70	70	7	7	7	7	7	7	7	7	7	
Ivanof Bay CDP	7	7	120	112	120	378	361	373				
Perryville CDP	124	112	120	112	120	378	361	373				
All communities	378	361	373	361	373	373	373	373				

a. Source: U.S. Census Bureau.

b. Source: ADF&G Division of Subsistence household surveys (CSIS), 1984, 1989, 1991, 2003, and 2011.

c. Alaska Department of Labor and Workforce Development, Research and Analysis Section. URL: <http://labor.alaska.gov/research/pop/estimates/data/TotalPopulationPlace.xls>.

d. Includes group quarters.

e. Includes full and mixed Alaska Native ethnicity.

"—" = not surveyed.

REPORT ORGANIZATION

The report is divided into 10 chapters. Chapter 1 provides a brief project overview. Chapter 2 describes the geographic setting and pertinent historical background focusing on area prehistory, the development of the area's commercial salmon fishery, and the establishment of present-day communities. Chapter 3 reviews the study objectives and research methods used. Chapter 4 describes the evolution of the present-day state/federal regulatory regime used to manage the subsistence salmon fishery in the CMA. Chapter 5 reviews CMA salmon permit return data for the period 2010–2012. Chapter 6 provides the results of the 2011 household subsistence salmon harvest survey and mapping component. Chapter 7 provides a comparison of the household harvest survey data collected in 2011 with previous harvest surveys conducted in 1984, 1989, 1991, and 2003. Differences between permit return harvest estimates and household survey harvest estimates are also discussed. Chapter 8 consists of 8 case examples of contemporary patterns of subsistence salmon fishing that more fully illustrate the various salmon harvest methods, fish processing and preservation techniques, and the composition of harvest and processing groups. These case studies provide information needed to understand the social, cultural, nutritional, and economic importance of subsistence salmon fishing for Chignik Area residents. The discussion in Chapter 9 offers an overall assessment of data collected during this project through participant observation, case studies, key respondent interviews, and household surveys. It details the major factors that have shaped changes and long-term trends in subsistence salmon harvesting techniques, fishing locations, salmon use, and overall participation in the subsistence salmon fishery. The report concludes with Chapter 10, providing a summary of study findings and recommendations for future research. A series of appendices contain the 2011 subsistence harvest area maps as well as other project background materials cited in this report.

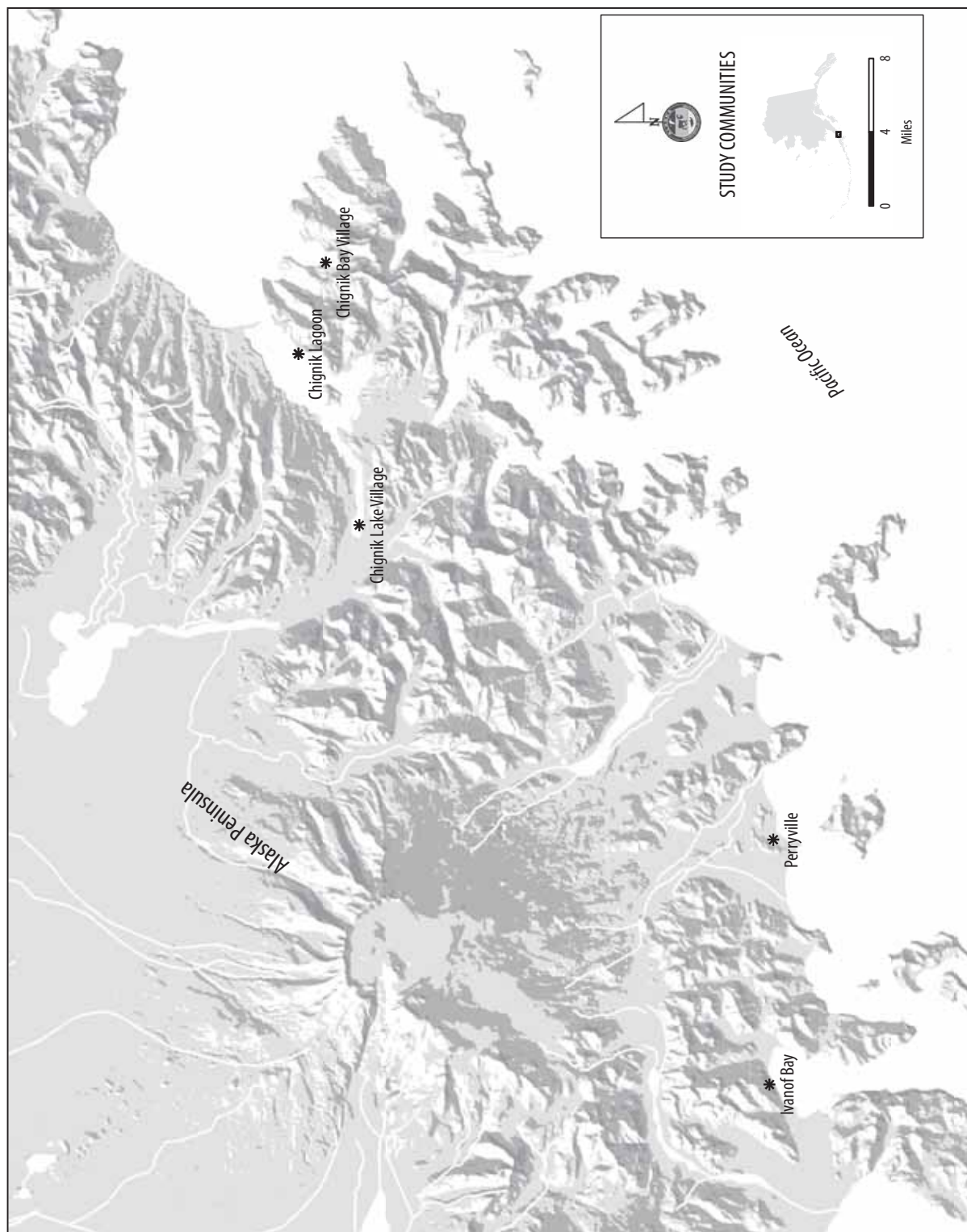


Figure 1-1.—Location of study communities of Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville.

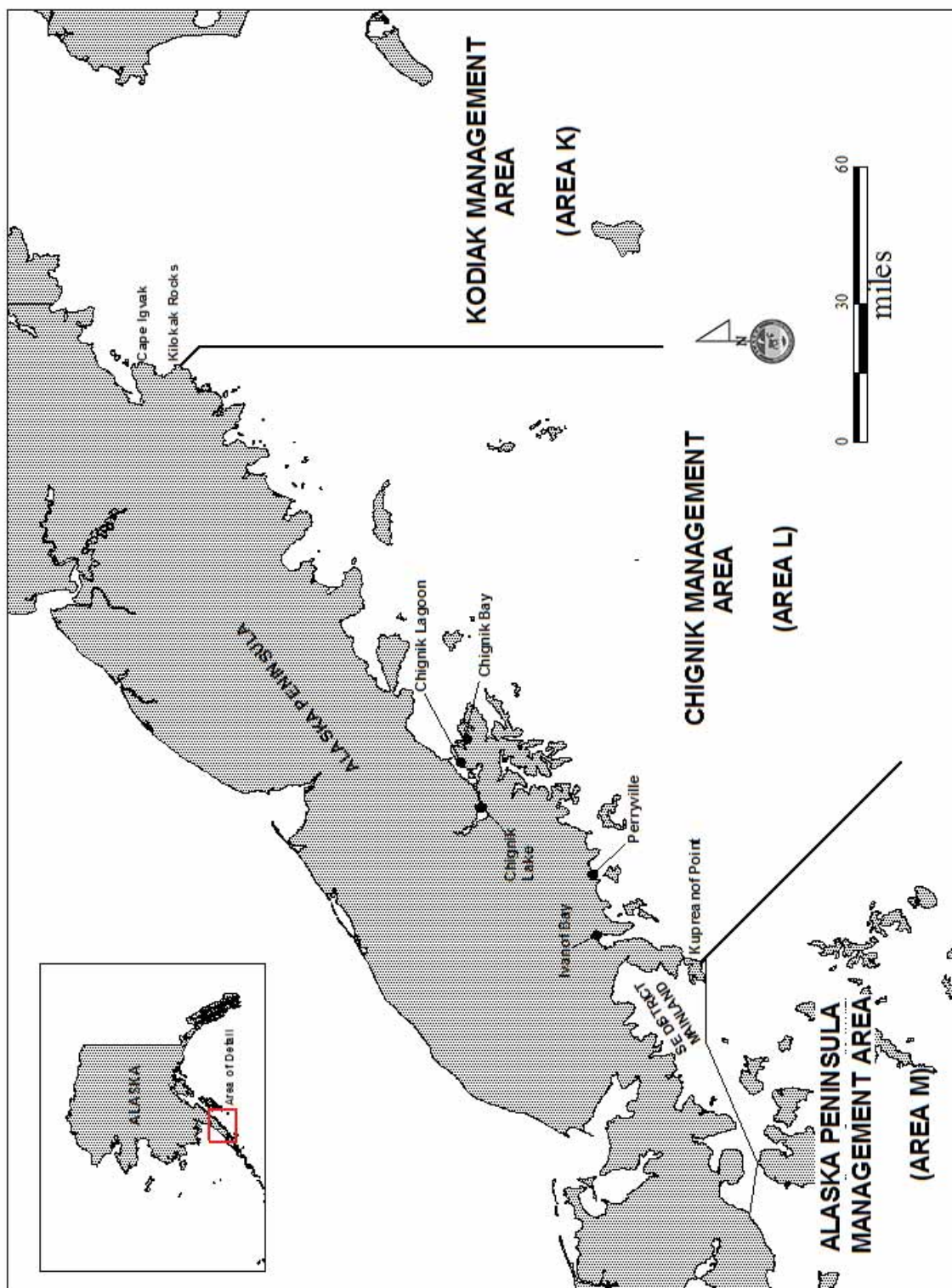


Figure 1-2.—Map of the location of Chignik Management Area and the study communities in the Alaska Peninsula.

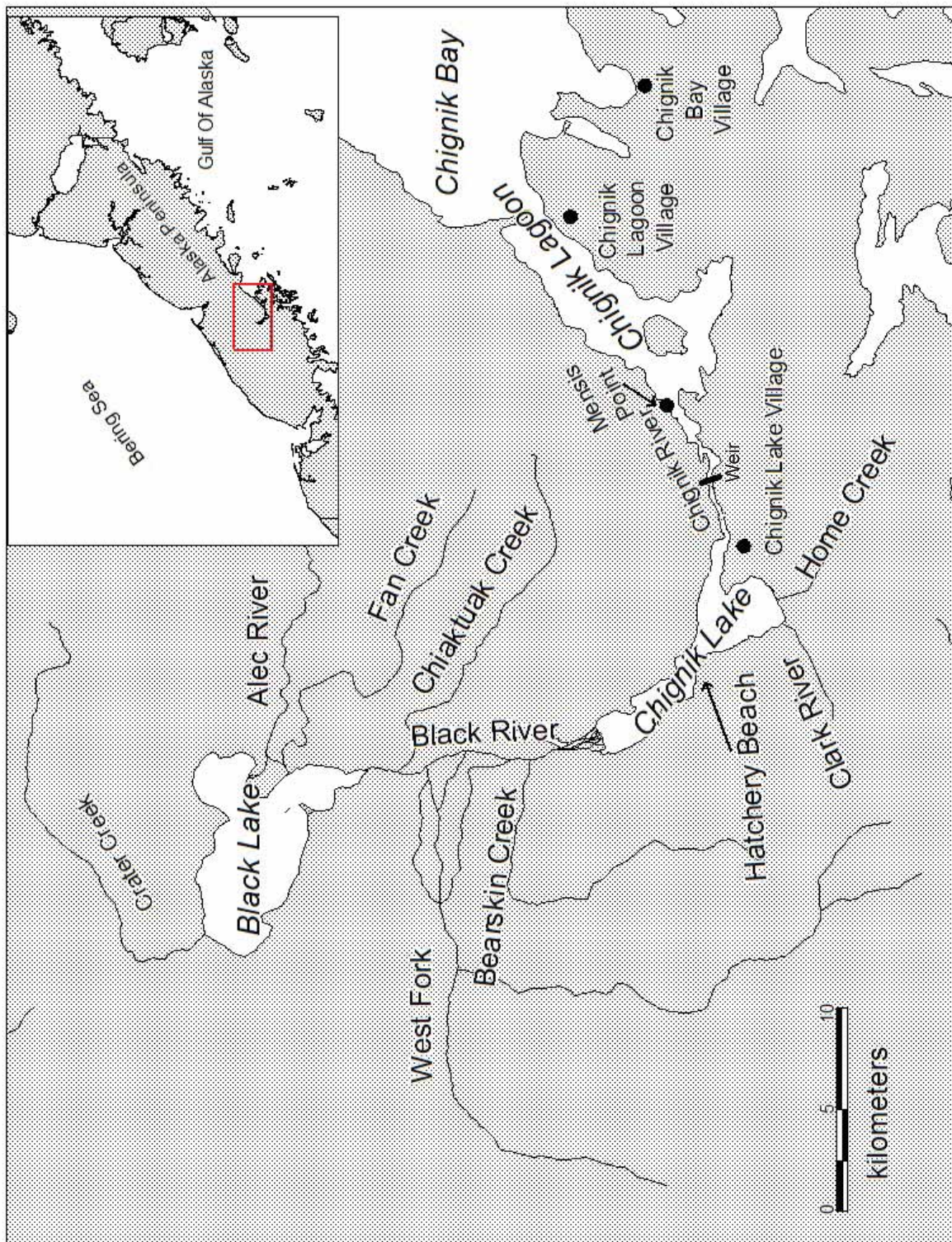


Figure 1-3.—Map of the Chignik River watershed and location of study communities of Chignik Bay, Chignik Lagoon, and Chignik Lake.

2. PHYSICAL AND HISTORICAL DESCRIPTION OF THE AREA

REGIONAL SETTING

The communities of Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville are all located within 40 miles of each other on the south, Pacific Ocean side of the central Alaska Peninsula. The region lies 460–500 miles southwest of Anchorage, and 250–300 miles west southwest of Kodiak City (Figure 1-1). The Alaska Peninsula is a narrow 475 mile long land mass extending from Alaska's southwestern mainland to the Aleutian Island chain. The Aleutian Range extends the length of the Alaska Peninsula's southern shoreline and is marked by numerous bays, rugged cliffs, and offshore islands. The Aleutian Range includes 32 active and inactive volcanoes rising to elevations of 4,000–8,250 ft above sea level. Mt. Veniaminof, 8,225 ft high, is currently among the most active volcanoes, situated 21 miles northeast of the community of Perryville and 25 miles west of the community of Chignik Lake.¹ In contrast to the rugged southern coastline, the northern side of the Alaska Peninsula slopes more gradually toward the coastal plain of Bristol Bay with a landscape that is predominantly tundra dotted with lakes.

The maritime climate of the central Alaska Peninsula region is greatly influenced by winds and moisture moving between the Pacific Ocean and Bristol Bay through the Aleutian Range. The 4 Chignik area communities have milder winters and cooler summers than communities that lie inland or on the Bering Sea side of the peninsula. Temperatures along the Pacific side of the Alaska Peninsula typically range from 45–65°F in summer and 10–35°F in winter. The annual precipitation averages about 23 inches. Water is a major feature throughout the Alaska Peninsula in the form of lakes, streams, rivers, ponds, wetland areas, bays, lagoons, and tidal flats. Water combined with high brush and alpine tundra all provide prime habitat for fresh and saltwater fishes, marine and land mammals, waterfowl, and plants (Selkregg 1974; TNC 2004).

The study communities are all located within the boundaries of the Lake and Peninsula Borough, the Alaska Peninsula National Wildlife Refuge, and ADF&G's commercial and subsistence fisheries CMA (Figure 1-2). Commercial salmon fishing is the economic mainstay of the region, and nearly every person residing in these communities uses salmon for subsistence (Morris 1987; Fall et al. 1995; Hutchinson-Scarborough and Fall 1996; Fall 2006; Hutchinson-Scarborough et al. 2010). All 5 species of North American Pacific salmon—Chinook salmon *O. tshawytscha*, sockeye salmon *O. nerka*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and chum salmon *O. keta*—are harvested commercially and for subsistence use in the CMA by year-round and seasonal summer residents of these communities. Chinook salmon are commonly referred to as “king” salmon; sockeye salmon as “red” salmon; coho salmon as “silver” salmon; pink salmon as “humpy” salmon; and chum salmon as “dog” salmon.

The 3 Chignik communities are within proximity of each other yet are not connected by roads. Each of these communities is named after the body of water they are situated next to: Chignik Bay, Chignik Lagoon, and Chignik Lake. All 3 of these communities lie within the Chignik River watershed, which supports the majority of commercial and subsistence salmon fishing effort within the CMA. The watershed forms a natural northwest–southeast pass through the Aleutian Mountain Range and includes 2 prominent lakes (Black Lake and Chignik Lake), and 2 major rivers: “upper” Chignik River, sometimes referred to locally as “Black River,” connects Black Lake and Chignik Lake, and Chignik River drains Chignik Lake into Chignik Lagoon (Figure 1-3). The Chignik River watershed hosts one of the largest populations of sockeye salmon on the south side of the Alaska Peninsula with average combined annual runs sometimes exceeding 2 million fish (Anderson and Nichols 2012). Adult sockeye salmon return to the Chignik River watershed in 2 primary runs that occur during summer and fall months and often overlap in early July. The early

1. Mount Veniaminof Description and Information. 2014. Alaska Volcano Observatory. Accessed May 2015. <https://www.avo.alaska.edu/volcanoes/volcinfo.php?volcname=Veniaminof>.

run generally peaks in late June and uses spawning areas primarily in tributaries of Black Lake. The late run peaks in late July and heads for spawning areas in Chignik Lake (Hatchery Beach) and Chignik Lake tributaries such as Clark River and Home Creek (Templin et al. 1999;). The Chignik River watershed also provides spawning and rearing habitat for Chinook, coho, pink, and chum salmon. There are coho, pink, and chum salmon runs that spawn in the rivers and streams along the southwestern Pacific shoreline and are most accessible to residents of Perryville (Rosier 1993).

HISTORICAL DESCRIPTION

The purpose of this section is to provide a broad overview of the history of the Chignik area, especially as it relates to the establishment of the commercial fishing and processing industries and their prominent role in the mixed economies of area communities. Archeological and linguistic evidence suggests that the Chignik region was a dividing line between the Aleut and Yupik groups prehistorically (Morseth 2013). Today's Alaska Peninsula *Alutiiq* people are the descendants of these eighteenth-century *Sugpiaq* speakers, "creoles" (a Russian term describing the child or descendent of an Alutiiq mother and Russian father), and other immigrants to the area (Partnow 2001). Most Alaska Native residents of the region today designate themselves as Alutiiq or Sugpiaq (singular *Sugpiat*) and Russian or Scandinavian (Partnow 2001).

REGIONAL PREHISTORY

Radiocarbon dating and recovered tool assemblages from archaeological sites approximately 100 miles northeast of the Chignik region indicate that humans have inhabited the northeast Alaska Peninsula for a minimum of 9,000 years (Henn 1978). In addition, archaeological research in the Aniakchak Region located about 50 miles northeast of Chignik points to a series of human occupations from 2000 years BP to 300 years BP (VanderHoek 2004). On the Alaska Peninsula, 60 to 200 miles southwest of the Chignik region, substantial archaeological research has been conducted that indicates that human occupants were present over the past 5,000–6,000 years (Maschner 1999; VanderHoek 2004).

The first archaeologist known to have conducted research in the Chignik region of the Central Alaska Peninsula was Don Dumond in the 1970s. At that time, the oldest radiocarbon date for this region was 2200 years BP, discovered from a charcoal sample Dumond collected at a habitation site located along the Chignik River. However, a blade core associated with the Palearctic early stone tool tradition was later found in the Chignik River region by a private collector suggesting that the Chignik River watershed region had human presence between 9000 and 5000 years BP and that the people represented placed a heavy reliance upon fishing in the Chignik River (Dumond 1977; Dumond 1992).

Most historical and prehistorical occupation sites in the Chignik region are located on or near productive salmon streams. Since Dumond's research in the 1970s, subsequent archaeological investigations were conducted in the Chignik drainage. For example, in the early 1990s the U.S. Fish and Wildlife Service conducted excavations at a prehistoric site near the current location of Chignik Lake. Radiocarbon dates indicated human occupation of the site between 2800 and 2600 years BP (Corbett 1995).

The most recent systematic archaeological investigation of prehistoric sites along the Chignik watershed were conducted from 2010 to 2012 by the University of Alaska Museum of the North and the National Park Service (Shirar et al. 2011, 2012, 2013). These investigations involved numerous archaeological and historical sites in the region from Chignik Lagoon to Black Lake and radiocarbon dates from charcoal samples and artifacts indicated human occupation from the present time to as far back as 4700 years BP (Shirar et al. 2011, 2012, 2013). All investigations of cultural sites in the Chignik area have consistently found stone tools, including notched net sinkers that indicate a continued reliance on fishing, most likely for salmon (Dumond 1992; Corbett 1995; Shirar et al. 2011, 2012, 2013).

Human occupation in the area could date back further than the archeological evidence indicates. Volcanologists have determined that between 4000–3400 years BP there were major volcanic events that

occurred in the region, including the eruption of Mt. Veniaminof, which very likely altered human history of the region and may have destroyed evidence of previous human occupations (VanderHoek 2009).

THE CONTACT ERA

The earliest recorded visit by western explorers to the Pacific Coast of the Alaska Peninsula occurred in 1741 with Vitus Bering's expedition in search of unoccupied areas and resources for Russian exploitation. A second expedition in the 1760s brought an influx of Russian fur traders to the Alaska Peninsula who succeeded in gaining control over indigenous inhabitants (Haycox 2002). Early Russian explorers of the Alaska Peninsula encountered numerous groups of indigenous peoples. Oral traditions indicate that there were 2 distinct cultural groups residing on the Alaska Peninsula at the time of Russian contact—Unangan speakers from the west and southwest Alaska Peninsula (referred to by Russians as Aleuts) and Yup'ik speakers who were ancestors to the Sugpiaq (Alutiiq) people from the central and eastern Alaska Peninsula (Partnow 2001). Archaeologists and linguists believe that the cultural border line that separated the Unangan (Aleut) people to the west and the Alutiiq–Sugpiaq people to the east was near the Chignik region. Many of today's residents of Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville are descendants of the Alaska Peninsula Pacific Sugpiaq–Alutiiq peoples (Partnow, 2001).

The Alutiiq people were maritime hunters whose homeland was the southern Alaska Peninsula (as well as Kodiak Island, lower Cook Inlet, and Prince William Sound). The sea, as well as inland streams and tundra, provided them with food, oil, and raw materials to manufacture clothing, shelters, and boats. They were extremely skilled at hunting and adept at using seal skin kayaks (*bidarkas*) and larger open boats (*umiats* or *baidar*). These skills were noted by early Russian explorers looking to expand their interests in Russian America and their involvement in the fur trade. The hunting skills of Alaska Natives made them a target for Russian exploitation. Russians introduced European goods, trade for cash, Christianity, and intermarriage, as well as new diseases of which Alaska Natives had no immunity. Massive deaths occurred amongst the Alutiiq people in the 18th and 19th centuries (Partnow 2001).

Russian exploitation of resources and the Alutiiq people continued until 1867 when the United States government assumed control of Alaska. American interests concentrated on whaling, the fur trade, and the development of commercial fishing. In 1888 the first salmon cannery was built in Chignik. By 1890, commercial salmon fishing had become the most profitable industry in the Chignik Area and has continued as such to the present (Partnow 2001).

ESTABLISHMENT OF PRESENT-DAY COMMUNITIES

Chignik Bay

The community of Chignik Bay is located on the south side of the Alaska Peninsula approximately 457 miles southwest of Anchorage. It is situated at the southern end of Chignik Bay at the head of Anchorage Bay (Figure 1-1; Plate 2-1). The community's backdrop involves a 3,000-foot mountain with the snow-capped Aleutian Range visible to the north. The mountains trap clouds, fog, and moisture, particularly on the Pacific side. Sand and strong winds associated with the region's frequent coastal storms inspired the Alutiiq people to name this community "Chignik" (spelled *cihniq*), which means "big wind" (Crowell et al. 2001).

The first reference to a settlement at Chignik Bay was by Ivan Petroff in 1880. He called it "Kaluiak" and described it as "a small village of about 30 'deer' [caribou] hunters" (Partnow 2001). In 1888 Chignik was established as a fishing community when fish prospectors from the Fisherman's Packing Company of Astoria, Oregon set up a salmon saltery. At that time, the population was estimated at 193 (Partnow 2001). The first cannery was built there in 1910 by Columbia River Packers, and what structure remains is the oldest continuously operating seafood facility in Alaska (Himes-Cornell et al. 2013).



Plate 2-1.—Present village of Chignik Bay

Early cannery operations attracted immigrant workers from all over the world including Scandinavia, Italy, China, Mongolia, Hawaii, and the Philippines. It was not until the 1920s that local Alutiiq people were offered employment by the canneries (Partnow 2001). The majority of individuals living in the Chignik communities today identify themselves as descendants of the unions of Alutiiq people and immigrants to the area (Partnow 2001). Throughout the years, Chignik has remained a center for commercial fishing. The fishing fleet has evolved from small boats and fish traps owned by the canneries to the privately-owned hand and purse seine boats that are in operation today.

Population

Chignik Bay's population fluctuates greatly from winter to summer because of commercial fishing and fish processing operations. However, there are a core number of people who live in the community year-round and claim Chignik Bay as their residence. The 2010 U.S. Census estimated Chignik Bay's population to be 91 residents (57 of which identified as being Alaska Native) residing in 41 households (U.S. Census Bureau 2011). In the 1980s–1990s, the population ranged from 178–188 residents but by 2000 had declined to 79. Population estimates in the 1980s and 1990s included occupants of group quarters that housed long term seafood processors and production workers. After a major fire at the Trident/Norquest facility in 2008, processing operations as well as housing for workers were transferred to floating processors, and these workers were no longer counted by the U.S. Census as residents of the community. Between 1990 and 2010

the population declined by 52% according to the US Census records (Table 1-1). Demographic information for 2011 from the subsistence salmon household survey will be presented in the results section of this report.

Economy

According to the 2008–2012 American Community Survey (ACS) 5-year estimates, Chignik Bay’s mean household wage and salary income was \$97,739, and per capita income was \$28,823 (U.S. Census Bureau 2011). An estimated 55% of Chignik Bay residents 16 years and older who were in the labor force were employed. Private sector jobs were held by 23% of employed adults with the remaining 77% holding public sector jobs. Top employers included the Lake and Peninsula School District, Bristol Bay Housing Authority, Chignik Bay Sub Regional Health Clinic Health Corporation, and the Bristol Bay Native Corporation (U.S. Census Bureau 2011).

The 2008–2012 ACS 5-year estimates also show that seasonal commercial fishing and seafood processing jobs will continue to be the primary contributors to Chignik Bay’s economy (U.S. Census Bureau 2011). According to Commercial Fisheries Entry Commission (CFEC) records, in 2010, 14 residents (15%) of Chignik Bay held a total of 24 commercial fishing permits. Of these permits, 54% were for salmon, 25% were for groundfish, 13% were for halibut, and 8% were for crab and “other” shellfish (Himes-Cornell et al. 2013). In 2010, residents held 128,200 shares of halibut quota. Also in 2010, there were 24 commercial crew licenses issued to Chignik Bay residents, and residents held the majority ownership of 22 commercial fishing vessels (Himes-Cornell et al. 2013).

Government, Native Entities, Facilities, and Services

Chignik Bay is part of the Lake and Peninsula Borough and was incorporated into a second class city in 1983, with a mayor and a 7-member city council. Alaska Native entities include the Chignik Bay Tribal Council, Far West Inc. Village Corporation (the Alaska Native Claims Settlement Act or ANCSA village corporation), and the Bristol Bay Native Corporation (the Alaska Native regional corporation).

Chignik Bay is accessible by air and sea. In 2010–2012, one primary commercial air carrier (Peninsula Airways at time of study) provided daily passenger, mail, and cargo service into Chignik Bay. The Alaska Marine Highway ferry services Chignik Bay from May–September and stops on both outgoing and incoming routes on its bi-monthly run from Kodiak to Dutch Harbor. Commercial fishing boats and a variety of other vessels use Chignik Bay’s docks or anchor in Anchorage Bay on a daily basis primarily to bring fish or supplies in and out of the village. The City of Chignik and the State of Alaska maintain roads throughout the community as well as a 2.5-mile long road leading to the airstrip. All-terrain vehicles and automobiles are commonly used by residents of Chignik Bay for local transportation.

Chignik Bay has a pre-K through grade 12 school, a gymnasium, a health clinic, a seasonal grocery and supply store, a recreation hall, a post office, and a fire station. Transportation infrastructure includes a 2,700 foot gravel runway, small boat harbor with breakwater, and 2 deep water docks capable of servicing ocean-going vessels. The community maintains water and sewer systems and telephone and electric facilities that provide satellite TV, internet, and a cellular phone tower. Chignik Bay currently has a shore-based seafood processing facility (Norquest–Trident Seafoods) and 2 community stores (1 privately-owned and 1 operated seasonally by Trident).

Chignik Lagoon

The community of Chignik Lagoon is named because of its location on the south shore of Chignik Lagoon (Plate 2-2). The community is located about 460 miles southwest of Anchorage on the Pacific side of the Alaska Peninsula. Wind, fog, rain and snow are common features of the area climate.

The community’s origins can be traced to Alaska Native (primarily Alutiiq), Scandinavian, and Russian ancestors that moved to the area from nearby Mitrofanina and Sutwik Island in the early 1900s (Morris 1987; Partnow 2001). Early accounts by a Russian priest describe a group of “Koniag Aleut” speakers that lived in 5 settlements situated along the shore of Chignik Lagoon and along the Chignik River in 1897. At that time,



Plate 2-2.—Present village of Chignik Lagoon

he described them as living in driftwood and thatch houses. He reported that they had used 20 bear skins to construct a prayer house and that they made money trading bear and fox skins (Morseth 2003).

The contemporary community of Chignik Lagoon developed as a fishing village because of the large sockeye salmon runs identified by Northwest coast fish prospectors that came to Chignik in 1888. By 1889, 3 Oregon and San Francisco-based seafood packing companies established canneries at the present site of the Chignik Lagoon community. By 1892, the 3 canneries had consolidated and were known as the “Chignik Bay Combination” and later became known as Alaska Packer’s Association. In 1896, 250 fishers and cannery workers were employed by the Chignik Lagoon Alaska Packers Cannery. By 1897, most of the fishers were of Eastern European descent, and fish packers were of Chinese descent. It was not until the 1920s that local Alaska Natives began to work in the canneries and on the fish traps (Partnow 2001).

Another Alutiiq community located on the northeastern shore of Chignik Lagoon near the sand spit, known as “Old Village” was originally occupied seasonally but grew into a year-round settlement with a Russian Orthodox Church when the commercial salmon industry began to develop in 1889. In 1903, a summer school opened at the present site of the community of Chignik Lagoon. Chignik Lagoon became a cultural and geographical boundary between the local Alaska Native community that lived primarily on the north side of Chignik Lagoon at “Old Village” and the newer community of mostly immigrant men residing on the south side of Chignik Lagoon at the present location of the community of Chignik Lagoon. In 1919 a flu epidemic decimated many of the Native Alaska residents, and “Old Village” was abandoned. Some of the survivors relocated to the present community of Chignik Lagoon, but many moved to Chignik Lake in 1960 and established a community there when a Russian Orthodox Church and school was built; they also established summer settlements along the north shore of Chignik Lagoon. These seasonal homes were used mostly as camps for summer subsistence fishing activities, fall hunting camps, and winter trap line camps.

Though the number of people using these camps has declined, there are still a few families from Perryville and Chignik Lake that continue to occupy them during the commercial fishing season.

Population

Chignik Lagoon's population fluctuates greatly from winter to summer because of the commercial and subsistence fishing opportunities and employment, but there are a core number of people who live in the community year-round and claim residency in Chignik Lagoon. The 2010 U.S. Census recorded that Chignik Lagoon had 29 occupied households with a population of 78 people, 74% of which identified themselves as being Alaska Native (Table 1). By age category, 64 (82%) were over 16 years of age, and 13 were students enrolled in preschool through grade 12. Of the total population, 51% (40) were male and 49% (38) were female.²

The first census recorded population for Chignik Lagoon in 1960 showed a population of 108 people (Hutchinson-Scarborough and Fall 1996). By 1980, the population had declined to 48 and remained about the same until 2000 when it rose to 103; then by 2010, the population had declined again to 78 residents (Table 1). The fluctuations are likely due to inconsistent cannery operations and the success of the local fishing fleet. Demographic information for 2011 from the subsistence salmon survey is presented in the results section of this report.

Economy

According to the 2008–2012 ACS 5-year estimates, Chignik Lagoon's mean household wage and salary income was \$125,726 (reflecting the amount of money made in the commercial fishing industry), and per capita income was \$53,532 (U.S. Census Bureau 2011). An estimated 73% of Chignik Lagoon residents 16 years and older who were in the labor force were employed. For those employed, 60% of residents worked for the government, 23% were private wage or salary workers, and 17% were self-employed. The primary year-round employers included the Lake and Peninsula School District, Chignik Lagoon Village Council, and the electric plant (U.S. Census Bureau 2011).

The 2008–2012 ACS 5-year estimates also show that commercial fishing is the economic mainstay for Chignik Lagoon. Commercial Fisheries Entry Commission (CFEC) records indicate that in 2010, residents of Chignik Lagoon held the majority ownership of 41 fishing vessels.³ Twenty-four residents of Chignik Lagoon (44% of population) held commercial fishing permits and 57% of these were actively fished. Of all permits held, 48% (22 permits) were for salmon (81% actively fished), and the remainder of permits were for groundfish, halibut, herring, and crab. In addition, there were 41 commercial crew licenses issued to Chignik Lagoon residents, mostly for salmon (Himes-Cornell et al. 2013).

Government, Facilities, and Services

Chignik Lagoon is an unincorporated part of the Lake and Peninsula Borough. The tribal government is the Native Village of Chignik Lagoon, the chartered Native Village Corporation is Chignik Lagoon Native Corporation, and the Alaska Native Regional Corporation is Bristol Bay Native Corporation.

Chignik Lagoon is accessible by air and sea. In 2010–2012, one primary commercial air carrier (Peninsula Airways) provided daily passenger, mail, and cargo service into Chignik Lagoon. The community has a state-maintained 1,810 foot gravel airstrip, a small boat harbor, health clinic, subsistence processing building and meeting hall, and fire and rescue services. The school, with gymnasium and library, serves grades K–12. The community maintains a network supporting telephone, satellite television, and internet services, and it has a cellular phone tower. The Alaska Marine Highway ferry provides bi-monthly service

2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs. n.d. Alaska Community Database Online: Community Information, Juneau. Accessed November 2014. <http://commerce.state.ak.us/cra/DCRAExternal/>

3. Commercial Fisheries Entry Commission. n.d. Permit Database, Juneau. Accessed November 2014. www.cfec.state.ak.us/index.htm



Plate 2-3.—Present village of Chignik Lake

to Chignik Bay from May through September. Chignik Lagoon residents often travel to Chignik Bay by skiff to pick up family, supplies, or both, which are brought in by ferry, or to visit the grocery store.

Chignik Lake

The community of Chignik Lake is located on the south side of the Alaska Peninsula approximately 470 miles southwest of Anchorage near the mouth of Chignik Lake (Plate 2-3). Wind, fog, rain, and snow are common features of the area climate. The lake is situated within a narrow pass that leads through the volcanic Aleutian Range from Bristol Bay near Port Heiden to the Pacific Ocean side of the Alaska Peninsula (Figure 1-1). The Chignik River is the major watershed in the CMA and consists of 2 interconnecting lakes (Black and Chignik) with a single outlet river (Chignik) that empties into the estuary of Chignik Lagoon (Sagalkin 2013). Five species of Pacific salmon return to the Chignik River; sockeye salmon returns consist of both an early and a late run. These 2 sockeye salmon runs are genetically distinct with the early run spawning primarily in Black Lake and tributaries and the late run spawning in Chignik Lake and tributaries (Sagalkin 2013). The residents of Chignik Lake use all 5 species of salmon that run up the river and are easily accessible in front of the community.

Although Chignik Bay and Chignik Lagoon were founded around fishing and fish processing, the current location of the community of Chignik Lake was first used by an Alutiiq family from the Bristol Bay side of the Alaska Peninsula in the 1920s. Many of the residents of Chignik Lake are descendants of a Native woman named Dora Artemie Lind Andre, born in 1903 at Bear River near Port Moller (Davis 1986). Her father was from Old Harbor on Kodiak Island, and her mother from Ugashik, on the northern shore of the

Alaska Peninsula. Her parents raised her at Old Village (near the Chignik Lagoon sand spit), where they stayed in the summers. They wintered at the current site of Chignik Lake to trap and because subsistence foods were easily accessed. Chignik Lake remained a winter trapping camp until the early 1960s when a school and Russian Orthodox Church were established there (Morris 1987). This school was constructed by local people to provide for children living in communities located on the Bristol Bay side of the Alaska Peninsula including Kanatak, Ilnik, and Port Moller. Before this, these children had to travel to Port Heiden, Pilot Point, or Kodiak if they wanted to attend school (Morris 1987). In addition to the church and school, the year-round availability of wild foods attracted a number of families from Perryville, Chignik Bay, and Chignik Lagoon who relocated to the Chignik Lake community. Many Chignik Lake families maintained summer fish camps and homes along Chignik Lagoon, a tradition that continued until about 2002 (Morris 1987).

Population

Chignik Lake's population fluctuates greatly from winter to summer because of the commercial and subsistence fishing opportunities, but there are a core number of people who live in the village year-around and claim residency in Chignik Lake. The 2010 U.S. Census Bureau recorded that Chignik Lake had 27 occupied households with a population of 73 people (95% were Alaska Native). Fifty-seven (78%) were over 16 years of age, and 23 students were enrolled in preschool through grade 12.⁴ Of the total population, 56% (41) were male and 44% (32) were female. The first census recorded population for Chignik Lake in 1960 showed a population of 107 people. By 1980, the population increased to 138 and remained about the same in 2000 at 145 then decreased considerably in 2010 with a population of 73 (50% population decline from 2000 to 2010) (Table 1-1). Demographic information for 2011 from the subsistence salmon survey is presented in the results section of this report.

Economy

According to the 2008–2012 ACS 5-year estimates, Chignik Lake's mean household wage and salary income was \$69,500, and per capita income was \$24,926 (U.S. Census Bureau 2011). An estimated 76% of Chignik Lake residents 16 years and older who were in the labor force were employed. Sixty-three percent of employed residents worked for the government, and 37% were private wage or salary workers. The majority (59%) of employed Chignik Lake residents in 2010, worked in education, services, health care, social assistance, public administration, and fishing and hunting jobs (U.S. Census Bureau 2011).

Commercial fishing has always been an important part of the Chignik Lake economy. Many Chignik Lake households either own a CMA salmon permit, use a transferred CMA salmon permit, or are involved in the fishery as crew members. Commercial Fisheries Entry Commission (CFEC) records for 2010 indicated that residents of Chignik Lake held the majority ownership of 7 fishing vessels, and there were 8 commercial salmon fishing permits held by Chignik Lake residents.⁵ Of these, 57% were actively fished in 2010. In addition, there were 27 commercial crew licenses issued to Chignik Lake residents, mostly for salmon (Himes-Cornell et al. 2013). The cash economy of this small community is based almost exclusively on the commercial fishery (Himes-Cornell et al. 2013). In addition to providing employment and a cash economy, the salmon fishery is a major food source and supports the subsistence sector of the local economy. Households in Chignik Lake annually use and depend on these salmon runs as part of their annual subsistence harvest.

Government, Facilities, and Services

Chignik Lake is an unincorporated part of the Lake and Peninsula Borough and is governed by the Chignik Lake Village Council; the regional ANSCA chartered Native Corporation is the Bristol Bay Native Corporation (BBNC). In addition Bristol Bay Native Association (BBNA) is a tribal consortium

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs. n.d. Alaska Community Database Online: Community Information, Juneau. Accessed November 2014. <http://commerce.state.ak.us/cra/DCRAExternal/>

5. Commercial Fisheries Entry Commission. n.d. Permit Database, Juneau. Accessed January 2016. www.cfec.state.ak.us/index.htm



Plate 2-4.—Present village of Perryville.

representing all the tribes within the BBNC and provides a variety of services and educational opportunities to tribal communities. The Alaska Department of Fish and Game operates the Chignik River Watershed Weir from May through September, which is located approximately 1 mile downriver of the community of Chignik Lake.

Plane and boat are the only means of transport into the community of Chignik Lake, and both are often inhibited by inclement weather. A 2,800-foot long gravel airstrip is managed by the Alaska Department of Transportation. A single commercial air carrier served Chignik Lake in 2010–2012, providing daily passenger service, as well as mail and cargo deliveries. The Alaska Marine Highway ferry provides bi-monthly service to Chignik Bay from May through September. Chignik Lake residents often travel to Chignik Bay by skiff to pick up family, supplies, or both, which are brought in by ferry, or to visit the grocery store.

Chignik Lake has a contract post office, a Russian Orthodox Church, a health clinic, village corporation and council offices, and a subsistence processing facility. The community maintains water and sewer systems, an electric and telephone grid, and a cellular phone tower. There is a locally-owned store with limited supplies. The Chignik Lake School provides instruction for grades pre-K through 12.

Perryville

The community of Perryville is located on the Pacific Coast of the Alaska Peninsula approximately 500 miles southwest of Anchorage (plates 2-4 and 2-5). Behind Perryville sits Mt. Veniaminof, an active volcano. Its snow topped peaks melt to create the Kametolook, Three Star, and Long Beach rivers.



Plate 2-5.—Perryville village setting.

Perryville’s origins can be traced to the eruption of the Mt. Novarupta volcano in 1912. At the time of this eruption, the founders of Perryville were residing in 2 small communities of Kaguyak (Douglas) and Katmai in what is now Katmai National Park and Preserve on the Pacific coast of the Alaska Peninsula (Partnow 2001). The June 6, 1912 eruption forced the evacuation of these communities. No one perished in the volcanic eruption because all of residents were working in Kafluk Bay at a commercial saltery at the time of the eruption (Partnow 2001). The eruption rendered the area uninhabitable. The evacuees moved to the current location of Perryville, and the settlers named their new village “Perry,” after a captain (Captain Perry) who had relocated them. The “ville” was added later to conform to U.S. Postal Service standards in 1930. The community has maintained a steady population and strong ties to the Alutiiq culture and a subsistence way of life. Perryville residents have close connections with residents of Chignik Lake and Ivanof Bay, and to a lesser extent, Chignik Bay (Partnow 2001).

Though Perryville’s location and resources are not as closely situated to the Chignik watershed where the majority of commercial salmon fishing occurs, researchers found that several residents of Perryville always participated in the Chignik Bay and Chignik Lagoon fisheries.

Population

According to the 2010 U.S. Census, Perryville’s population was 113 people residing in 38 households (Table 1-1). A large majority of the population (97%) identifies themselves as Alaska Native or Alaska Native and

mixed race. Perryville is the only community in the CMA that has maintained, and at times increased, its population over its 100-year history. The first census was taken in 1920 and reported a population of 85.⁶

Economy

According to the 2008–2012 ACS 5-year estimates, Perryville’s mean household wage and salary income was \$40,414 and per capita income was \$14,003 (U.S. Census Bureau 2011). Forty-one percent of Perryville residents live below the poverty level. An estimated 34% of Perryville residents 16 years and older who were in the labor force were employed. Eighty-one percent of employed residents worked for the government and 19% were private wage or salary workers. The primary year-round employers were, and remain, the Lake and Peninsula School District, and the local government of the Native Village of Perryville.⁷

According to the 2008–2012 ACS 5-year estimate, commercial fishing, as well as subsistence fishing and hunting and trophy hunting (primarily guiding services for non-resident bear hunts) represented major components of the Perryville economy. Commercial Fisheries Entry Commission records show that in 2010, 8 residents of Perryville held a total of 13 commercial fisheries permits, most of which were salmon permits for the CMA purse seine fishery. Of those permits, 88% were actively fished.⁸ The remaining permits were for groundfish and herring. Fifteen Perryville residents held commercial crew licenses, primarily for CMA salmon, and 10 registered fishing vessels were owned by residents of Perryville (Himes-Cornell et al. 2013).

Government, Facilities, and Services

Perryville is an unincorporated community within the Lake and Peninsula Borough. Tribal government entities include the Native Village of Perryville, Oceanside Village Corporation, and BBNA. Perryville is only accessible by air and sea. There is a limited local road system throughout the community, and unmaintained ATV trails that lead to Ivanof Bay and Chignik Lake. ATVs and skiffs are the primary transportation used by Perryville residents. The community is served by a primary air carrier that provides passenger service and mail transport 3 times a week. The community has a state-maintained 3,300 foot gravel airstrip, a community water system, and one central building facility housing the health clinic and tribal offices. There is also a subsistence processing building, a K–12 school with a gymnasium, a community store with limited supplies, and a diesel power plant. Wind turbines provide supplemental electricity to help power services in the community.

Ivanof Bay

The community of Ivanof Bay, located 12 miles west of Perryville, was established in 1960 by Perryville residents seeking better access to subsistence resources. In 1990, there were 36 inhabitants residing in 9 households in Ivanof Bay. In 2004 the local school closed due to low enrollment, which then caused the infrastructure of the community to collapse. Several families that resided in Ivanof Bay relocated back to Perryville, and others relocated to Chignik Bay, Sand Point, Kodiak, and Anchorage. A few former residents have continued to use the community seasonally. Around 2010, a few former residents of Ivanof Bay reestablished year-round residency there, and the 2010 U.S. Census survey counted 7 inhabitants residing in 2 households (US. Census 2011). At the beginning of this project no year-round residents were identified as living in Ivanof Bay; therefore it was not included in this study.

6. ADLWD (Alaska Department of Labor and Workforce Development) Research and Analysis Section. 2014. “1880 to 2000 Census data: 1920 Census, population of outlying possessions by minor civil divisions.” Accessed June 2015. <http://laborstats.alaska.gov/census/hist.htm>

7. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs. n.d. Alaska Community Database Online: Community Information, Juneau. Accessed November 2014. <http://commerce.state.ak.us/cra/DCRAExternal/>

8. Commercial Fisheries Entry Commission, Juneau. n.d. “Permit Database.” Accessed November 2014. www.cfec.state.ak.us/index.htm

HISTORY OF CHIGNIK AREA COMMERCIAL FISHING AND CANNERY OPERATIONS

Chignik Bay

In 1888, the community of Chignik (referred to as “Chignik Bay”) was established as a fishing village when the Fishermen’s Packing Company of Astoria, Oregon established a salmon saltery. The area quickly became known for its abundant sockeye salmon runs and the ease of harvesting them with fish traps. In 1896, Chignik Bay received its first 2 canneries, owned by Pacific Steam Whaling Company and Hume Brothers and Hume Company (Hutchinson-Scarborough and Fall 1996). These early commercial fisheries involved little participation from Alaska Natives in the area. Gillnets and fish traps were primarily operated by Euro-American fishers, and fish processing was primarily carried out by Chinese cannery workers. In 1901, these competing enterprises joined with Pacific Packing and Navigation Co., and in 1904 both canneries were purchased by the Northwestern Fisheries Company (NFC), referred to as “Norwestern” by local people. The new combined operation based out of the Pacific Steam Whaling Company’s facility and the Hume cannery was closed (Cobb 1921; Hutchinson-Scarborough and Fall 1996). In 1910 Columbia River Packers Association (CRPA) built another cannery in Chignik Bay located at the mouth of Indian Creek. These 2 Chignik Bay canneries, along with the Alaska Packers Association cannery (APA) in Chignik Lagoon, remained in competition until 1914 when the 3 companies agreed to share the harvest equally. These 3 canneries remained in cooperative operation until 1933 when the NFC cannery was acquired by the Pacific American Fisheries (PAF). In 1941, CPRA sold to the Alaska Packers Association (APA); then in the 1950s, both APA and CRPA merged their operations (Dahlberg 1979).

The APA cannery burned in 1976 and was rebuilt the next year and leased to Sealaska, which continued operations (Mobley 2004; Chignik Bay Community Development Plan: 2009). In 1985, Aleutian Dragon Fisheries (ADF) subleased the facility from Sealaska. In 1987, the Chignik Property Partnership became owners of the ADF facility and leased to ADF until it was sold to Norquest Seafoods in 1998. In 1979, Peter Pan and one of the local Alaska Native village corporations built a cannery near the old Northwest Fisheries cannery. The Peter Pan facility was purchased in 1984 and became Chignik Pride Fisheries (CPF). In 1992, Aleutian Dragon Fisheries (ADF) and CPF were the only remaining processing plants in the CMA.

With the advent of freezers, salmon canning was largely replaced in the early 1980s with cold storage and salting. In 1997, Norquest Seafoods (a merger of Silver Lining Seafoods and Lafayette Fisheries) purchased the ADF cannery. In 2002 Trident Seafoods purchased the CPF facility. In 2004, Trident Seafoods Corporation purchased Norquest Seafoods, and Norquest became a subsidiary of Trident Seafoods while maintaining its product and name. Soon after, Chignik Bay Norquest and Trident Seafoods consolidated and have operated as a single business in Chignik under the Norquest name ever since (Mobley 2004). On July 21, 2008, the Trident–Norquest seafood processing plant burned down,⁹ and to date has not been rebuilt. After the fire, floating processors operated by Trident have been brought to Chignik Bay annually during the salmon harvest season to process fish. In recent years, smaller seafood companies have purchased local Chignik-caught salmon, including International Seafoods of Alaska and Alaska Pacific Seafoods, both based in Kodiak, and Klawock Oceanside Inc. based in Klawock (T. Anderson, Commercial Fishery Biologist, Kodiak, ADF&G, personal communication). Historically, seafood harvested and processed in Chignik included 5 species of Pacific salmon, Pacific cod, halibut, rockfish (red snapper), pollock, herring, sablefish, and octopus. Chignik canneries began processing shrimp in the 1970s, and king and Tanner crab in 1987 (Hutchinson-Scarborough and Fall 1996). Residents of the CMA region continue to participate heavily in the commercial and subsistence salmon fisheries, as well as halibut and groundfish fisheries. Chignik Bay remains the central hub for seafood processing.

9. Associated Press. 2008. Fire Destroys Trident Fish Processing Plant in Chignik Bay. Indian Country News. <http://www.indiancountrynews.com/index.php/news/9-news-from-through-out-indian-country/4157-fire-destroys-trident-fish-processing-plant-in-chignik-bay>.



Plate 2-6.—Chignik River watershed looking southwest; Chignik Lake in foreground, Chignik Lagoon in distance.

Chignik Lagoon

In 1889, the Fishermen's Packing Company (formerly Scandinavian Packing Company) of Astoria, Oregon built and operated the first cannery in Chignik Lagoon called the Chignik Bay Company (referred locally at the time as "Scandinavian"). It was located on the eastern shore of Chignik Lagoon, at the location of the present community of Chignik Lagoon. That same year, 2 additional canneries were built in Chignik Lagoon: one company was owned by Shumagin Packing Company of Portland, Oregon, and the other by Chignik Bay Packing Company of San Francisco, California. In contrast to the largely non-Native workforce in Chignik Bay, Alutiiq people from Unangashak and Mitrofanina came to work at the salteries in Chignik Lagoon and in Anchorage Bay (Chignik). By 1892, the 3 canneries had consolidated and were known as the "Chignik Bay Combination." The canning operation occurred in the Chignik Bay Company plant, but all 3 canneries shared expenses, employees, and revenue. By 1893, they all joined a pool with many other Alaska canneries known as the Alaska Packer's Association (Hutchinson-Scarborough and Fall 1996).

In 1911, Columbia River Packing Company operated a cannery on the north side of Chignik Lagoon. At that time, there were approximately 30 traps in the lagoon alone, and more operated from Chignik Bay northeast to Aniakchak Bay (Hutchinson-Scarborough and Fall 1996). In 1926, Harry W. Crosby built and operated a floating salmon cannery named "King Salmon," in Chignik Lagoon (Hutchinson-Scarborough and Fall 1996). Though he only operated it 1 season, Crosby returned in 1932 and built a land-based cannery on the west side of Chignik Lagoon and changed the name in 1936 from King Salmon to the Chignik Lagoon Packing Company, and again in 1947 to Chignik Fisheries Company (Dahlberg 1973).

The Columbia River Packing Company and facilities in Chignik Lagoon later became Columbia Ward Fisheries (CWF) and included a fully equipped store, a small dirt airfield, a large dock for loading and unloading fish and supplies, several bunkhouses, and a mess hall. Several summer homes were built on nearby grounds to house families from Perryville and Chignik Lake so they could work in the cannery and fish the company's boats. When the cannery stopped running their own vessels, these summer homes were bought or leased to families from Chignik Lake and Perryville to use as summer homes and fish camps when they came to Chignik to commercial fish. As a shore-based operation, CWF remained in operation at Chignik Lagoon running a couple of tenders, dock, and a well-stocked store until it closed after the 1990 salmon fishing season (Hutchinson-Scarbrough and Fall 1996).

Ivanof Bay

In the mid-1800s the Pacific Northwest fishing industry began to expand into Alaska. In 1889 and 1890, 2 canneries were built and operated by the Western Alaska Packing Company in Ivanof Bay and Stepovak Bay. The cannery in Stepovak Bay was dismantled in 1891 due to scarcity of fish (Moser 1899). The bay of Ivanof Bay was originally named by Lt. Dall of the U.S. Coast and Geodetic Survey in 1880. Ivanof Bay was the site of a cannery in the late 19th century and again from 1930 to the early 1950s.



Plate 2-7.—Axel Carlson and Walter Stepanoff, Sr. haul a skiff full of salmon in Chignik Lagoon in the 1930s. Photograph courtesy of Walter Stepanoff, Jr. of Chignik Bay and the Kodiak Maritime Museum.

PAST AND PRESENT COMMERCIAL FISHING METHODS

According to J.F. Moser, in 1899 salmon were caught for commercial sale principally with traps; drag seines were also used and gillnets were once used (1899). The most intense period of the fishery occurred between 1900–1914 when area bays and tidelands were studded with traps, some with leads as long as 3,500 ft (Dahlberg 1979). According to a Chignik Lake elder, in 1911, there were approximately 30 traps in the lagoon alone, and more operated from Chignik Bay northeast to Aniakchak Bay (Hutchinson-Scarbrough and Fall 1996). An average-sized trap could catch the equivalent of 5.9 beach seines or 26.2 gillnets (Dahlberg 1979). Moser (1899) noted that from 1890 to 1896, an average of 61,400 cases of fish per year were packed from the Chignik River by a single company. In 1896 Moser asserts that 3 separate canneries, “with all their forces and every effort they could make,” only packed approximately 65,000 cases of Chignik fish. Then in 1897, by doubling their efforts, they were each able to pack 74,159 cases (Moser 1899). Moser stated that “anyone who sees the fisheries at Chignik will readily understand that the stream cannot stand the excessive fishing” (1899). In 1899 it was evident that the Chignik salmon stock was being overfished by commercial fishers (Moser 1899, Hutchinson-Scarbrough and Fall 1996). However, traps continued to be used by canneries operating in the Chignik area through the 1940s (Hutchinson-Scarbrough and Fall 1996).

Hutchinson-Scarbrough and Fall (1996) wrote that with the advent of statehood in 1959, traps were prohibited by the State of Alaska because of their efficiency and because of emerging concerns about over



Plate 2-8.—Contemporary purse seiners with power blocks in Chignik Lagoon, June 2011.

exploitation of salmon stocks. In addition to cannery-owned fish traps, many privately-owned beach seine and gillnet vessels were also used to catch fish along the Chignik area shoreline (Tuten 1977). Early nets were made of cotton soaked in tar, but were later replaced with more durable nylon (Pedersen 1990). These early boats had a large roller on the stern, and the nets had to be pulled in and let out by hand.

The first power block was brought to Chignik in the 1960s by Raymond Anderson (Personal communication with August Pedersen, Chignik Lagoon resident, 1990). By 1959, seining dominated all commercial salmon fishing activities in the Chignik Area (Plate 2-8). Between 1980 and 2012, seines were the only legal gear for commercial salmon fishing in the CMA (Hutchinson-Scarborough and Fall 1996).

A fish-counting weir and tower were first established on the Chignik River by the U.S. Bureau of Fisheries in 1922. The weir was operational from 1922–1937 and again in 1939 (Dahlberg 1979). In the early 1950s, a pile driven weir was erected. Since statehood in 1959, the Alaska Department of Fish and Game has operated this weir annually during the summer months to provide estimates of salmon escapements in the Chignik River watershed. The weir is located on the Chignik River, about 1.5 miles below the Village of Chignik Lake, and about 3 miles above the mouth of the river at Chignik Lagoon (Plate 2-9). In 1994 a video camera system was installed at the 2 fish gates and continues to be used by ADF&G to enumerate the fish escapements (Dahlberg 1979; Duesterloh 2005).

Historical Involvement in Chignik Fisheries

In the early years of the commercial fishery, salmon canneries did not offer much employment for local Alutiiq people. Cannery jobs were filled primarily with seasonal immigrants from China, the Philippines, and Hawaii. Scandinavian and Italian immigrants also worked in the fishery, but primarily as fishers. Many of these newcomers married into local Alutiiq families and stayed in the region. Descendants of these people continue to live in the Chignik area today (Hutchinson-Scarborough and Fall 1996).

In 1896, 250 fishers and cannery workers who were employed by the Chignik Lagoon Alaska Packers Cannery were primarily first generation Chinese immigrants and former residents of the lower 48 states (Partnow 2001). By 1897, the Chignik commercial fishing fleet was made up of Eastern Europeans and Americans from the contiguous United States, and the fish packers were primarily of Chinese descent. It was not until the 1920s when Alaska Natives were hired to work in the canneries and on the fish traps (Partnow 2001). Starting around 1900, Alutiiq people residing in the Chignik area worked for the Chignik canneries and Alaska Commercial Company on a part-time basis. By 1920, more Alaska Native peoples coming from other communities on the Alaska Peninsula such as Kanatak, Mitrofanina, and Perryville were employed in the canneries. Fish trap and cannery workers could obtain fish for their home use from the cannery, but many of the local families preferred to catch their own fish with beach seines or gillnets in local streams or along the beach. When the traps were first used, in the late 1890s and 1900s, some traps were so efficient that they often prevented local Natives from catching enough subsistence salmon. Upon completion of the commercial fishing season, local Alutiiq people would supplement their salmon stocks with spawned-out salmon from local streams. (Hutchinson-Scarborough and Fall 1996; Morseth 2003).

Fox farms were established by the Alaska Commercial Company on nearby islands to supplement cannery work for a few families from CMA communities during the winter months (Hutchinson-Scarborough and Fall 1996). Some families in the area would spend the winters in trapping cabins with their families, trapping along the mainland coastlines for furs to be sold. By 1940, trapping had declined greatly because the price of furs had dropped, making commercial fishing at Chignik Lagoon the only reliable source of cash (Tuten 1977, Hutchinson-Scarborough and Fall 1996). Consequently, commercial fishing became the



Plate 2-9.—Chignik River Weir, June 2011.

primary source of cash income for local families. In addition, subsistence harvests remained the primary source of food for almost all local households, a pattern that continues today (Hutchinson-Scarbrough and Fall 1996).

The local communities continue to have a clear and strong tie to the area's land and ocean resources. Commercial fishing, particularly the salmon fishery, remains a primary component of the economies of the communities within the Chignik Management Area. In 2012, there were 126 finfish permits (salmon and other species) issued for CMA. Just less than half were held by residents of the communities within CMA—29 by Chignik Lagoon residents; 11 by Chignik Bay residents; 11 by Perryville residents and 3 by Chignik Lake residents.¹⁰ In 2012, there were 69 CMA commercial salmon permit holders that participated in the 2012 commercial salmon season. (Anderson et al: 2013).

10. Commercial Fisheries Entry Commission. n.d. Permit Database. Juneau. Accessed April 2016. <https://www.cfec.state.ak.us/plook/#permits>

3. RESEARCH OBJECTIVES AND METHODS

RESEARCH OBJECTIVES

The project had 5 research objectives, several of which focus on data collection and data analysis. Appendices A and B include the survey instrument and key respondent interview protocol.

1. Compile an ethnographic description of the subsistence salmon fisheries of the communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville in 2010–2012 that includes the social organization of harvesting and processing practices, harvesting, processing and fish camp locations, fish camp usage, gear usage, and distribution.
2. Create an estimate of the subsistence harvest of salmon by location and date for Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville in 2011 and 2012 based on participant observation, interviews, permit data, and systematic household surveys.
3. Document the social context of subsistence fishing efforts (e.g., division of labor, methods of harvest, process, and preservation, and patterns of consumption, and sharing) by residents of study communities by compiling case studies through participant observation and interviews.
4. Describe the decision-making processes of case study families during their salmon subsistence harvests and identify the sociocultural, economic, and environmental factors that shape subsistence salmon harvesting activities in all 4 study communities in 2011 and 2012.
5. Describe changing trends in the salmon subsistence fishery, including harvest levels, harvest locations, social organization of harvesting and processing practices, and harvesting and processing methods, in the study communities over the last 20–30 years.

RESEARCH METHODS

Literature Review

An extensive literature review was done by the principal investigators prior to fieldwork and throughout the fieldwork process. The literature review focused on ethnographies of fish camps in Alaska and anthropological literature on adaptations to changing economic, ecological, and sociocultural changes in rural fishing communities. The literature review helped frame questions for key respondents and topics for ethnographic fieldwork. Project personnel searched library databases, and anthropology, sociology, and fisheries journals.

Ethnographic Fieldwork

The primary research methods used to complete study objectives were participant observation, semi-structured key respondent interviews, and household harvest surveys. Ethnographic fieldwork followed the general outline below.

1. Identify all subsistence fishing families in each community.
2. Select multiple families to work with during subsistence fishing.
3. Observe and participate in subsistence harvesting, processing, and distribution.
4. Interview experienced fishers to record their observations of the salmon runs and of their fishing activities.

5. Map the location of all current fishing locations and retired fish camps.

Table 3-1 provides a chronology of project activities. More detailed descriptions of individual fieldwork efforts are included below. Table 3-2 lists the project staff that contributed to this study and report. Over the course of 3 years, Hutchinson-Scarborough and Marchioni made 5 trips together to the study communities. Evans and Van Lanen each made 1 trip to the community of Chignik Lake to assist in conducting harvest surveys.

Chignik Lake Ethnographic Fieldwork in 2010

In October 2010, the first ethnographic fieldwork for the project occurred in Chignik Lake. Key respondent interviews and mapping were carried out with 6 knowledgeable subsistence salmon harvesters. Participant observation was conducted with 1 resident while he brined and prepared sockeye salmon for smoking.

Chignik Lake Ethnographic Fieldwork in 2011

Ethnographic fieldwork focusing on summer subsistence sockeye salmon fishing at Chignik Lake occurred in June 2011. Marchioni and Hutchinson-Scarborough conducted participant observation with several individuals who were subsistence fishing for early-run sockeye salmon.

In October and November of 2011, Hutchinson-Scarborough, Marchioni, and Van Lanen traveled to Chignik Lake to observe the late-run subsistence sockeye salmon harvest. During each of the 2011 trips, several semi-structured interviews were conducted with high harvesters and elders in the community.

Chignik Lake, Chignik Lagoon, and Perryville Ethnographic Fieldwork 2012

Fieldwork in 2012 involved 3 trips to the Chignik communities. In April 2012 Marchioni and Hutchinson-Scarborough traveled to all 4 study communities and conducted subsistence salmon harvest surveys with a census of each community.

Table 3-1.—Project chronology.

Date	Event/activity
May, 2010	Community presentations and approvals.
July–October 2010	Project preparation.
October 1, 2010	Key respondent interviews and participant observation in Chignik Lake.
November–December 2010	Data analysis.
January 1, 2011	Presentation at Chignik Board of Fisheries.
February–April 2011	Project preparation and organization with communities.
June 2011	Participant observation and interviews in Chignik Lake.
September, 2011	Poster presentation at Lowell Wakefield Fisheries Symposium, Anchorage.
November, 2011	Participant observation in Chignik Lake.
February–March 2012	Data analysis.
April–May 2012	Household surveys in Perryville, Chignik Lagoon, and Chignik Bay, and Chignik Lake.
May–June 2012	Participant observation and interviews in Chignik Lagoon and Perryville.
July 2012–March 2013	Data analysis.
October–November 2012	Participant observation in Perryville and Chignik Lake.
January–September 2013	Data analysis.
September, 2013	Submit draft results to communities for review.
October 2013–March 2014	Write draft report.
April–May 2014	Received comments and revised draft report.
May 2016	Complete and distribute final report.

Table 3-2.—Project study staff.

Task	Name	Organization
Project design and management	William Simeone	ADF&G Division of Subsistence
	Lisa Hutchinson-Scarbrough	ADF&G Division of Subsistence
Project management	William Simeone	ADF&G Division of Subsistence
	Davin Holen	ADF&G Division of Subsistence
Project lead	Lisa Hutchinson-Scarbrough	ADF&G Division of Subsistence
Project lead	Meredith Marchioni	ADF&G Division of Subsistence
Data management lead	Dave Koster	ADF&G Division of Subsistence
Administrative support	Jennifer Bond	ADF&G Division of Subsistence
	Maegan Smith	ADF&G Division of Subsistence
Programmer	Dave Koster	ADF&G Division of Subsistence
Data entry	Margaret Cunningham	ADF&G Division of Subsistence
	Theresa Quiner	ADF&G Division of Subsistence
	Zayleen Kalalo	ADF&G Division of Subsistence
	Barbara Dodson	ADF&G Division of Subsistence
Data cleaning/validation	Dave Koster	ADF&G Division of Subsistence
Data analysis	Dave Koster	ADF&G Division of Subsistence
	Terri Lemons	ADF&G Division of Subsistence
Cartography	Bronwyn Jones	ADF&G Division of Subsistence
Publications lead	Adam Knight	ADF&G Division of Subsistence
Editorial review lead	Dave Andersen	Research North
Production lead	Lisa Ka'aihue	Consultant
Field research staff	Lisa Hutchinson-Scarbrough	ADF&G Division of Subsistence
	Meredith Marchioni	ADF&G Division of Subsistence
	James Van Lanen	ADF&G Division of Subsistence
	Sarah Evans	ADF&G Division of Subsistence
Local research assistants	Debbie Carlson	Chignik Bay
	Angela Daugherty	Chignik Bay
	Michelle Anderson	Chignik Lagoon
	Alvin Pedersen	Chignik Lagoon
	Jerry Kalmakoff	Chignik Lake
	Rona Lind	Chignik Lake
	Dana Phillips	Perryville
	Ivon Washington	Perryville

In late May to early June 2012 Marchioni and Hutchinson-Scarbrough conducted participant observation with families harvesting early-run sockeye salmon in Chignik Lagoon and families harvesting coho, chum, and pink salmon in Perryville. Participant observation was not conducted in Chignik Bay because of extensive commercial fishing activities that coincided with the timing of these visits. However, Global Position System (GPS) was used to document the location of fish camps along the north shore of Chignik Lagoon.

In November of 2012 Marchioni and Hutchinson-Scarbrough made a third trip to conduct participant observation in Chignik Lake during the late sockeye run and in Perryville during the coho run.

Key Respondent Interviews

Semistructured interviews in the study communities occurred throughout the project span of 2010–2012. Five interviews took place in the first project year in Chignik Lake with Hutchinson-Scarbrough and Evans. In the second project year, Marchioni and Hutchinson-Scarbrough completed 15 semi-structured interviews. In 2012, 8 interviews were conducted in Chignik Lagoon, 3 in Perryville and 2 in Chignik Bay. A total of 33 key respondent interviews were conducted in all four study communities for the project.

Key respondents, chosen by researchers for the extent of their experience subsistence fishing, ranged from elders who had been fishing for 50 years or more, to younger people who were just beginning to fish. In addition, key respondents represented both households who participated in the commercial salmon fishery

and took home fish from their commercial catches, and those who used multiple types of subsistence salmon fishing gear. Interviews were conducted using an open-ended approach: residents were asked general, neutral questions to direct their conversations. An interview protocol (Appendix B) was used and these general questions usually led to respondents addressing the more specific questions.

The results of in-depth, semi-structured interviews and participant observation are summarized in the case studies of fishing locations and fishing families. Additionally, items from key informant interviews are introduced in Chapter 9 Discussion.

Household Surveys of 2011 Subsistence Salmon Harvests

In April 2012, Hutchinson-Scarbrough and Marchioni conducted subsistence salmon harvest surveys with a census of each of the 4 communities. The survey included standard survey questions regarding demography and salmon harvests so as to produce data that are comparable with other study years and consistent with the division's subsistence salmon database.

Data collected during the survey included:

1. Demographic data, including age, sex, relation to household head, and ethnicity;
2. The household's participation in 2011 subsistence salmon fisheries, including whether the household used, fished for, received, or gave away salmon;
3. Salmon harvests by species and gear type;
4. The respondent's assessment of the 2011 subsistence salmon season; and
5. The respondent's assessment of issues and concerns about the subsistence salmon fishery.

Hutchinson-Scarbrough and Marchioni visited each household to conduct the survey and distributed a 4-page overview that described the project and the role of the data generated from the household survey.

The sampling goal was to administer the survey to at least 1 representative of each year-round household in each of the 4 study communities. Table 4 presents the sample achievement for the survey conducted in 2012 for the 2011 harvest year. In total, 94 surveys (85% of households) were completed, and there were 14 no contacts and 2 refusals. The overall refusal rate was 2.1%. By study community, sample achievement was 88.5% in Chignik Bay, 87.0% in Chignik Lagoon, 81.5% in Chignik Lake, and 85.3% in Perryville.

Table 3-3.—Sample achievement, Chignik area communities, 2011.

	Chignik Bay	Chignik Lagoon	Chignik Lake	Perryville
Number of dwelling units	26	23	27	34
Interview goal	26	23	27	34
Households interviewed	23	20	22	29
Households failed to contact	3	3	5	3
Households declined to be interviewed	0	0	0	2
Total households attempted to interview	23	20	22	31
Refusal rate	0.0%	0.0%	0.0%	6.5%
Final estimate of permanent households	26	23	27	34
Percentage of total households interviewed	88.5%	87.0%	81.5%	85.3%
Interview weighting factor	1.1	1.2	1.2	1.2
Sampled population	68	53	75	86
Estimated population	77	61	92	101

Source ADF&G Division of Subsistence household surveys, 2012.

Analysis of Household Survey and Permit Data

Subsistence salmon harvests were estimated for each study community based on both the reported harvests from returned permits and the harvests reported during postseason interviews. Harvest information noted during ethnographic fieldwork, as well as data from returned permits, were available to assist respondents during postseason interviews. Harvest estimates were expanded to non-returned permits and non-surveyed households. The formula used for standard expansion of community harvests is as follows:

$$H_i = \bar{h}_i S_i \quad (1)$$

where

$$\bar{h}_i = \frac{h_i}{n_i} \quad (2)$$

(mean harvest per returned survey)

H_i = the total estimated harvest (numbers of fish) for each community i ,

h_i = the total harvest reported on returned permits and during household surveys,

n_i = the number of returned permits and completed household surveys, and

S_i = the number of permits issued (includes households that initially did not obtain permits, but, as discovered during household interviews, had harvested salmon in the subsistence fishery. The data from these “late” permits were added to the permit list).

To compare estimates of subsistence salmon harvests based on returned permits with those based on postseason surveys, harvests numbers reported on permits returned to ADF&G before the household surveys began were included in the database and used to produce a community estimate. Interviewed households reviewed any harvest data they had provided before the survey and provided additional harvest numbers for harvests that may have taken place after the permit had been returned (such as spawned-out sockeye salmon, etc.). Harvest information from households that did not return permits was added to the Division of Subsistence permit database and used to develop an estimate of subsistence harvests for the annual CMA report that is produced by the ADF&G Division of Commercial Fisheries.

COMPILING CASE STUDIES

Hutchinson-Scarborough has been involved in research projects in the communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville for over 20 years. Her extensive knowledge surrounding each community’s involvement in all salmon fishing activities is extensive. Prior to the start of fieldwork, she was able to confer with the tribal councils and identify individuals and families that were the highest harvesters and would be likely candidates for inclusion as case studies. Case study families were chosen based on these initial discussions with each community’s tribal council, the timing of the fieldwork trips, and each family’s willingness to participate in the project. Informed consent was acquired from each family who participated prior to participant observation, except in the few cases when timing was convenient for researchers to accompany a family, who had not been predetermined.

Case studies focused on fishing families and fishing locations. Kinship diagrams are used to illustrate harvesting and processing groups, as well as harvest distribution patterns. For other examples of the case study approach and kinship diagrams, see Fall et al (2010: 39,44,59,122,137), Schichnes and Chythlook (1988:105–116) and Fall et al. (1984:67–81). Analysis of case study data focuses on:

1. Organizational principles (age, sex, kinship, other) of the subsistence salmon fishery in 2010–2012;

2. Harvesting, processing, and storing methods;
3. Decision making that informs harvest goals and harvest levels;
4. The geographical scope of the subsistence fishery;
5. The interrelationships between subsistence harvests of salmon and other resources;
6. The environmental, economic, social, and cultural factors that shaped subsistence salmon harvests in the study communities in 2010–2012; and
7. The environmental, economic, and socio-cultural factors that have shaped subsistence salmon harvests in the study communities over the last 3 decades for key respondents and case study families.

4. SUBSISTENCE SALMON REGULATION OVERVIEW IN CHIGNIK MANAGEMENT AREA

There are 5 communities in Alaska Department of Fish and Game's (ADF&G) salmon Chignik Management Area (CMA): Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay. Published Division of Subsistence reports for the CMA include annual salmon permit harvest reports, sporadic household surveys, and subsistence salmon ethnography studies.

The Division of Subsistence household harvest surveys show that salmon compose approximately 45% of all resources harvested, by weight, for subsistence in these communities (Fall et al. 1995). Chignik subsistence salmon permits are issued annually by CMA vendors, with harvest reports due to the department by December 31. The 2011 estimated total subsistence salmon harvest was 13,732 salmon: 78% sockeye salmon, 11% coho salmon, 8% pink salmon, 2% chum salmon, and 1% Chinook salmon. This harvest was above the 10-year average of 12,183 total salmon. The 2012 estimated total subsistence salmon harvest was 8,242 salmon, below the 10-year average, and consisted of 68% sockeye salmon, 18% coho salmon, 10% pink salmon, 3% chum salmon, and 1% Chinook salmon.

BACKGROUND

In Alaska, subsistence fishing is regulated through a dual management system between the State of Alaska and the federal government, depending on location. Overlapping of state and federal jurisdictions occurs in many areas. The federal government regulates federal subsistence fisheries on federal public lands and federally reserved waters in Alaska. The Alaska Board of Fisheries (BOF) has the authority to create and modify regulations for state subsistence fisheries, and the Federal Subsistence Board (FSB) creates regulations for federal subsistence fisheries. State law allows for participation in subsistence fisheries by all Alaska residents regardless of their location of residence within Alaska. Federal law allows subsistence harvests only by residents of rural areas as defined by the FSB. The CMA contains both state- and federally-managed fisheries.

Subsistence uses of wild resources are defined by the State of Alaska as "noncommercial, customary and traditional uses" for a variety of purposes. Purposes include direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources harvested for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption (AS 16.05.940[33]).

Under Alaska's subsistence statute (AS 16.05.258), the BOF must identify fish stocks that are customarily and traditionally taken or used for subsistence, and, if there is a harvestable surplus of these stocks, adopt regulations that provide reasonable opportunities for subsistence uses of these stocks to take place. Whenever it is necessary to restrict harvests, subsistence uses have a preference over other uses of the stock.

The CMA includes all waters of Alaska on the south side of the Alaska Peninsula bounded by a line extending 135° southeast to a point at the southern entrance to Imuya Bay near Kilokak Rocks at lat 57° 10.34' N, long 156° 20.22' W, then due south, and a line extending 135° southeast from the tip of Kupreanof Point at lat 55° 33.98' N, long 159° 35.88' W. (5 AAC 01.450).

In 1993, the BOF made a positive determination that salmon in the CMA are customarily and traditionally taken or used for subsistence (a "positive C&T finding") and specified amounts of salmon that are reasonably necessary for subsistence (ANS) in the management area. In 2002, the BOF modified the original finding for ANS at 5 AAC 01.466 (a) and (b) (ADF&G 1994). The current ANS for Chignik Bay, Central, and Eastern districts combined is 5,200–9,600 early-run sockeye salmon; 2,000–3,800 late-run sockeye salmon; 100–150 Chinook salmon; and 400–700 salmon other than sockeye or Chinook salmon. In the Perryville and Western districts combined, the ANSs are 1,400–2,600 coho salmon and 1,400–2,600 salmon, other

than coho salmon. The BOF has also set an ANS for rainbow/steelhead trout *O. mykiss* at 200–300 lb and for finfish other than those listed above at 15,200–22,800 lb of usable weight.

CMA SUBSISTENCE SALMON REGULATIONS

State of Alaska Subsistence Salmon Regulations for CMA

Current (2013–2014) State of Alaska regulations¹ governing subsistence salmon fishing in the CMA require that to fish, an individual must obtain an annual subsistence salmon permit, and must be an Alaska resident (5 AAC 01.480). Annually, permits are available locally at the Chignik ADF&G weir facility and from local CMA community vendors. The permit holder must record daily salmon harvests directly on the permit, and return it to ADF&G by December 31. Catch information obtained from subsistence permits is compiled annually and used to assess regional subsistence salmon fisheries. There is an annual limit of 250 salmon per permit. (5 AAC 01.480(b)(c)).

Under state regulations, all waters within the CMA are open year-round for subsistence fishing except for the following areas or conditions:

- Only Alaska residents are eligible to obtain a CMA subsistence salmon permit; they may fish in the areas open to subsistence at any time. A commercial Chignik Area salmon fishing license holder (includes CFEC Permit and crewmember license) may subsistence fish during a commercial salmon fishing period, except for 12 hours before a commercial salmon fishing period and 12 hours after a commercial salmon fishing period (5 AAC 01.485).
- Subsistence salmon fishing is permitted in the Chignik River; however, salmon may not be taken upstream from the ADF&G weir to the outlet of Chignik Lake from July 1–August 31 (5 AAC 01.475(1)); which is closed to protect spawning Chinook salmon. The Chignik River, beginning 100 yards below the weir, is open to subsistence salmon fishing year round.
- Subsistence fishing is closed within 100 yards above or below the Chignik weir when it is operational (5 AAC 01.470).
- Subsistence fishing is closed year-round in Black Lake or any tributary to Black Lake or Chignik Lake, except the waters of Clark River and Home Creek from each of their confluences with Chignik Lake to a point 1 mile upstream (5 AAC 01.475(2)). The BOF amended the subsistence regulations in 2008 to include these tributaries for the purposes of providing additional harvest opportunities for subsistence fishers.
- Commercial salmon fishing licence holders may also subsistence fish for salmon at any time instead of commercial fish except during the 12 hours before a commercial salmon fishing period and the 12 hours following the closure of a commercial salmon fishing period, and any subsistence harvests must be recorded on subsistence permit.
- Commercial fishers may also retain finfish from lawfully taken commercial catches for their home use, known as “home pack,” including use for bait. These fish, if taken, are required to be reported on the commercial fish ticket and not on the subsistence salmon permit.

Reported home pack harvest estimates by species are included in the ADF&G Division of Commercial Fisheries CMA annual finfish management reports (Anderson et al. 2013). Division of Subsistence household surveys collect data on home pack harvests, and results will be presented later in this report.

There is no “personal use” fishery for salmon in the CMA, but sport fishing by Alaska residents and nonresidents is allowed, with some restrictions in both fresh and salt waters, under a sport fishing license².

1. ADF&G. 2013–2014 Subsistence and personal use statewide fisheries regulations. Alaska Department of Fish and Game, Juneau.

2. ADF&G. 2013. 2013 Alaska Sport Fishing Regulation Summary, Kodiak Island, Alaska Peninsula, Aleutian Islands. Alaska

Rod and reel or hook and line are sometimes used to harvest subsistence caught salmon under federal subsistence regulations (Hutchinson-Scarborough and Fall 1996; Hutchinson-Scarborough et al. 2010). Salmon harvests by geartype are not required to be reported on the annual salmon permit record of harvest; however, harvests by gear type have been documented by Division of Subsistence during household surveys in the CMA communities, including 2011. Results will be presented later in this report.

Federal Subsistence Fishery in CMA

The federal government (Fish and Wildlife, Office of Subsistence Management) has, since 1990, regulated subsistence fishing on federal public lands and waters in Alaska to meet the requirements of the rural subsistence priority in Title VIII of the Alaska National Interest Lands Conservation Act. To provide for federal management of subsistence fisheries on Alaska rivers and lakes and limited marine waters within and adjacent to federal public lands; the secretaries of the US Interior and Agriculture departments publish regulations (independent from State of Alaska) (36 CFR 242 and 50 CFG 100). Federal subsistence fisheries are authorized in portions of the CMA for the permanent residents of the CMA communities. In the CMA, federal subsistence salmon fisheries occur in many of the same locations as the state subsistence fisheries and salmon fishing openings, closings, and fishing methods are the same as those allowed for the subsistence taking of salmon under state regulations unless superseded by a Federal Special Action. Within the Chignik watershed, depending on the area that a person fishes, in addition to a State subsistence fishing permit, a Federal subsistence permit may also be required. 2013 was the first year a Federal permit was required for some of this fishery noted below.³ The following is a list of the 2013–2015 federal subsistence regulations for the harvest of salmon within the Chignik Management Area:⁴

- Fishers must be a resident of one of the communities located within the Chignik Management Area.
- Within the Chignik watershed, depending upon the area that is open to fishing, in addition to a state subsistence fishing permit, fishers may be required to also have a federal subsistence permit.
- If a permit is required, a record of subsistence-caught fish must be kept on the permit. The record must be completed immediately upon taking subsistence-caught fish and must be returned no later than the due date listed on the permit.
- Salmon may be taken by seine, gillnet, rod and reel, or with gear specified on a subsistence fishing permit, except that in Chignik Lake, purse seines are not allowed. Salmon may also be taken without a permit by snagging (by hand line or rod and reel); by using a spear, bow and arrow; or by capturing by bare hand.
- Salmon may be taken in the Chignik River with rod and reel from a point 300 ft upstream of the ADF&G weir to Chignik Lake from January 1 through August 9, with no daily harvest or possession limit, and under the authority of a federal subsistence fishing permit.
- Salmon may be taken by gillnet in Black Lake or any tributary to Black or Chignik lakes under a federal subsistence fishing permit.
- Salmon may be taken by gillnet in the waters of Clark River and Home Creek from their confluence with Chignik Lake upstream 1 mile.
- Salmon may be taken without a permit in the open waters of Clark River and Home Creek by snagging (hand line or rod and reel); by spear, bow and arrow; or by capture by hand. The daily harvest and possession limits using these methods are 5 per day and 5 in possession.

Department of Fish and Game, Juneau.

3. Derek Hildreth, Program Analyst/Permit Specialist, U.S. Fish and Wildlife Service, Alaska Regional Office, Office of Subsistence Management, Regulations Division, Personal communication email March 8, 2016.

4. USFWS (United States Fish and Wildlife Service). 2013. Subsistence management regulations for the harvest of fish and shellfish on federal public lands and waters in Alaska, effective April 1, 2013–March 31, 2015. U.S. Fish and Wildlife Service, Anchorage.

- If a subsistence fisher holds a commercial fishing license, she or he may subsistence fish for salmon only as specified on a subsistence fishing permit.

Additional information about the federal subsistence fishery is available by contacting the United States Fish and Wildlife Service, Office of Subsistence Management in Anchorage, Alaska. (<http://www.doi.gov/subsistence/index.cfm>).

RECENT REGULATORY HISTORY

Subsistence harvest patterns in the CMA are often influenced by Chignik commercial salmon fisheries because many of those who commercial fish are also subsistence harvesters. Regulations for subsistence salmon fishing are tied to Chignik commercial fishing operations.

Prior to 2002, the CMA commercial fishery was managed by ADF&G as a competitive, limited entry permit fishery. Pre-2002 regulations, which have remained in effect up until time this report publication, allowed subsistence fishing with seine and gillnet gear and required an individual permit with a seasonal limit of 250 salmon. Purse seines could be used to harvest subsistence salmon, except in Chignik Lake, which has been open by regulation to subsistence salmon fishing with gillnets or hand seines since 1985 (Morris 1987:185). Also prior to 2002, but no longer in current regulation, CMA commercial salmon harvesters could not subsistence fish between June 10 and September 30; although they were allowed to remove salmon caught during commercial openings for home use, and subsistence salmon fishing was not allowed in Chignik River upstream of the ADF&G weir site to Chignik Lake, in tributaries to Chignik Lake, or in Black Lake.

From 2002 to 2005, the CMA commercial salmon fishery was managed based on 2 management plans: the Chignik Area Management Plan (competitive fishery) and the Chignik Area Cooperative Purse Seine Salmon Management Plan (cooperative fishery; Stichert 2007b). After development of the cooperative fishery, ADF&G management staff initiated subsistence permit conditions in 2003 that increased subsistence harvest opportunities for commercial fishing license holders.⁵ By regulation, commercial fishing permit holders could not subsistence fish for salmon from 48 hours before the first commercial salmon fishing opening through September 30. Subsistence fishing permit conditions allowed commercial permit holders who were not engaged in commercial fishing during an opening for cooperative or competitive fleets to subsistence fish during commercial openings, after registering with ADF&G.

In 2004, through emergency order, ADF&G allowed subsistence salmon fishing within the Chignik River, excluding the waters 100 yards upstream and downstream of the Chignik weir, through June 30. In addition to obtaining a subsistence permit, commercial harvesters wishing to subsistence fish after the first commercial opening were allowed, with a requirement to register with ADF&G staff working at the weir. ADF&G established a subsistence fishing schedule for these commercial harvesters depending upon whether they fished for the cooperative fleet or independently (Bouwens 2004).

At its 2004 meeting, the BOF adopted regulations to increase subsistence fishing opportunities for commercial salmon fishing license holders by allowing them, with certain restrictions (5 AAC 01.485), to harvest subsistence salmon during the commercial salmon fishing season. In addition, the BOF directed ADF&G to manage for an increase in escapement of sockeye salmon during the August commercial fishery (from 50,000 to 75,000), in order to enhance late-season subsistence opportunities in Chignik Lake. Although the commercial fishery was limited in August, the sockeye salmon escapement goal was not achieved in 2005 (Bouwens 2005). In 2005, the BOF opened the Chignik River to subsistence fishing, except for waters within 300 ft of the weir, and except for a July 1 through August 31 closure upstream of the weir to protect spawning Chinook salmon (Stichert 2007a).

The cooperative fishery plan was determined to be illegal by the Alaska Supreme Court in March 2005, but in May 2005 the BOF reestablished a modified cooperative management plan by emergency regulation in response to the court's decision. The court recognized that the timing of their decision did not allow cooperative members to revert to independent fishing to participate in the 2005 season and allowed the

5. Regulations providing for a cooperative commercial salmon fishery in CMA were invalidated by a decision of the Alaska Supreme Court and have not been operative since 2005.

fishery to operate under the modified regulation while they deliberated over it. However, in early 2006, the court issued an opinion on the original decision that the cooperative fishery was illegal unless the Alaska legislature amended the Limited Entry Act to allow it (Knapp 2007:38–42). Since 2006, however, the CMA commercial fishery has been managed solely under the *Chignik Salmon Management Plan* as a competitive fishery (Anderson, et al. 2013).

During its January 2008 meeting, the BOF adopted regulatory changes to subsistence fishing in the CMA that allowed subsistence salmon fishing in Clark River and Home Creek from their confluences with Chignik Lake upstream 1 mile. The use of gillnets for subsistence fishing in the CMA remained legal, but when they are fixed, anchored or otherwise held in place, they may not obstruct more than one-half of the stream that is open to subsistence salmon fishing (Jackson and Anderson 2009).

The Village Council of Chignik Lake submitted a regulatory proposal at the CMA BOF meeting in January 2011. The proposal, if adopted, would have legalized subsistence fishing in the only areas in the CMA closed under state regulations—Chignik Lake, Black Lake, and all tributaries to both lakes—as well as legalized the use of hook and line gear for late-run spawned-out sockeye salmon in Clark River and Home Creek (Alaska Board of Fisheries 2011b). The BOF took no action on the proposal; however the Federal Subsistence Board (FSB) adopted a similar regulation for the CMA at its January 2011 meeting (Alaska Board of Fisheries 2011a; 76 FR 45:12566, 12578–12579 [March 8, 2011]; 36 CFR 242.27 (e) (8)).

At the FSB regulatory meeting January 24, 2013, the FSB adopted a proposal submitted by the Chignik Lake Traditional Council to allow the harvest of salmon in the Chignik River, with rod and reel, from a point 300 ft upstream of the ADF&G weir to Chignik Lake from January 1 through August 9, with no daily harvest or possession limit under the authority of a federal subsistence fishing permit. In addition they adopted regulations allowing the take of salmon by gillnet in Black Lake or any tributary to Black or Chignik lakes. The BOF closed this portion of the river in 2004 to protect spawning Chinook salmon, and it remains closed for subsistence fishing July 1–August 31, but open to sport fishing, under state regulation.⁶⁷

The BOF at their December 2013 Chignik Finfish meeting adopted a board-generated proposal to codify a management measure first established through board intent language adopted in 2004. The management measure is intended to ensure in river harvest opportunities above the Chignik River weir to satisfy late-run subsistence harvests. To do so, ADF&G shall manage for 50,000 sockeye salmon, in addition to late-run escapement needs, which shall be composed of 25,000 fish in August and 25,000 fish from September 1–15.⁸

The BOF at their February 2016 Alaska Peninsula, Aleutian Islands and Chignik Finfish meeting adopted a proposal to amend 5 AAC 15.357(b)(3)(B) to read “the department shall manage the commercial fishery to allow for the passage of at least 75,000 sockeye salmon above the Chignik River weir, in addition to late-run sockeye salmon escapement needs, to provide an inriver harvestable surplus above the Chignik River weir in August and September of at least 25,000 fish in August and 50,000 fish from September 1 through September 30.”^{9,10} These fish are to ensure escapement needs and to provide an inriver harvestable surplus above the weir for subsistence uses. In addition the Board amended regulation 5 AAC 01.485 for clarity, with revisions to read: “In the Chignik Area, a commercial salmon fishing permit holder may not subsistence fish for salmon during the 12 hours before a commercial salmon fishing period and the 12 hours

6. Federal Subsistence Board. Public Regulatory Meeting Proceedings, Volume III. January 24, 2013, Anchorage. Accessed July 2014. <http://www.doi.gov/subsistence/library/transcripts/upload/FSB-Mtg-24-Jan-13-2.pdf>

7. Federal Subsistence Board. Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska, 2013–2015, 47–48. Federal Subsistence Board, Office of Subsistence Management, Anchorage. http://www.doi.gov/subsistence/regulation/fish_shell/upload/chignik.pdf

8. Alaska Board of Fisheries. 2013. Meeting Information, Chignik finfish, December 5–6, 2013. Accessed May 2015. <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo&date=12-05-2013&meeting=chignik/>

9. Alaska Board of Fisheries. 2016 Alaska Peninsula/Aleutian Islands/Chignik Finfish, February 23–February 29, 2016, Preliminary Summary of Actions. Accessed April 2016. http://www.adfg.alaska.gov/static-f/regulations/regprocess/fisheriesboard/pdfs/2015-2016/aream/aream_soa_2016.pdf

10. ADF&G. 2016. RC 105, Substitute Language for Proposal 172. Accessed April 2016. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2015-2016/aream/rcs/rc105_ADFG_for_Johnson_Substitute_Language_Proposal_172.pdf

following the closure of a commercial salmon fishing period. However, a commercial salmon fishing permit holder may choose to subsistence fish instead of commercial fish for salmon during a commercial salmon fishing period.”¹¹

11. ADF&G. RC 117, Substitute Language for Proposal 197. Accessed April 2016. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2015-2016/aream/rcs/rc117_ADFG_Requested_by_BOF_Substitute_Language_for_Proposal_197.pdf

5. CHIGNIK MANAGEMENT AREA SUBSISTENCE SALMON PERMIT DATA: 2010–2012 SUMMARY OF HARVEST

Since 1976, ADF&G has collected harvest data with subsistence salmon permits. Permits are issued with a harvest report designed for residents to record the date, location, species, and quantity of salmon harvested. To ensure a high return rate, each permit holder is required to return the previous year's permit in order to receive a permit the following year. Permit data are analyzed by ADF&G staff and are used to create harvest estimates for each community. This chapter describes recent CMA harvest data collected from subsistence salmon permits.

RECENT CMA SUBSISTENCE SALMON PERMIT HARVEST ESTIMATES

In 2012, the total estimated CMA salmon harvest was 8,242 fish, which was 40% (5,490) fewer salmon than in 2011 (13,732 fish). The 2012 harvest was also well below the recent 5-year and 10-year historical averages. The historical average of salmon harvested from 1977–2011 was 11,340 total salmon 8,242 of which was sockeye. However, the 2012 estimate was similar to the 2008 and 2009 total harvests of 8,783 and 8,907 respectively. Therefore, even though the 2012 harvest numbers indicate a decline, they are still within the range of previous years (Table 5-1; Figure 5-1).

Harvest reports printed on the back of subsistence salmon permits direct fishers to record each species of salmon they harvest. From 1977–2011, the CMA total salmon harvest has been composed of an average of 78% (10,578) sockeye salmon, 11% (1,458) coho salmon, 8% (1,289) pink salmon, 2% (355) chum salmon, and 1% (52) Chinook salmon (Figure 5-2). The 2010 CMA subsistence salmon harvests consisted of 74% sockeye salmon (8,148), 16% coho salmon (1,820), 6% pink salmon (656), 2% chum salmon (222), and 2% Chinook salmon (188) (Table 5-1; Figure 5-3). The most recent 5-year average (2007–2011) composition of the salmon harvest in the CMA comprised 76% sockeye salmon, 13% coho salmon, 8% pink salmon, 2% chum salmon and 1% Chinook salmon (Table 5-1). The species composition of both the 2011 and 2010 salmon harvest by percentage is consistent with the recent 5-year average (2007–2011) for the CMA. However, in terms of quantity harvested, 2011 represented a significant (72%) decline in Chinook salmon harvests (188 fish in 2010 to 52 fish in 2011), as well as a 29% decline in coho salmon harvests (1,820 fish in 2010 to 1,289 fish in 2011) (Table 5-1; Figure 5-4).

The 2012 total salmon harvest consisted of 68% sockeye salmon (5,607), a significant (47%) decline from the 2011 sockeye salmon harvest. Coho salmon made up 18% (1,488) of salmon harvested in 2012, very similar to the 2011 harvest of 1,458 and chum salmon made up 3% (220), a 38% decline from 2011. Chinook salmon consisted of 1% (116) of the 2012 salmon harvest, a 55% increase from 2011 but within the recent 5-year (2007–2011) average of 94, 10-year average (2001–2011) of 138 and historical average (1977–2011) of 83 (Table 5-1; Figure 5-5). Sockeye salmon displayed a notable decline in harvest numbers which was confirmed by residents who said the Chignik River late-run sockeye salmon did not come in as strongly as expected.

CMA SUBSISTENCE SALMON HARVESTS BY COMMUNITY

Beginning in 1980, fishers who chose to harvest their subsistence salmon from the CMA had to obtain a permit. The majority of individuals who do their subsistence salmon fishing in the Chignik area are residents of Chignik Lake, Chignik Lagoon, Chignik Bay, or Perryville. Ivanof Bay is a Census Designated Place within the Chignik Management Area; however, in 2010 the census found a population of 7 individuals, and researchers were told there were no residents in 2012. Ivanof Bay was not part of the research for this

Table 5-1.—Historical subsistence salmon harvests, Chignik Area, 1977–2012.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1977	NA	NA	50	9,700	2,400	600	1,800	14,550
1978	NA	NA	50	6,000	500	600	2,100	9,250
1979	NA	NA	14	7,750	34	0	262	8,060
1980	82	37	6	12,475	32	169	478	13,160
1981	29	7	0	2,049	0	0	0	2,049
1982	59	15	3	8,532	12	0	2	8,548
1983	32	21	0	3,078	1,319	850	1,250	6,497
1984	77	64	23	8,747	464	204	330	9,768
1985	59	48	1	7,177	50	25	26	7,279
1986	74	38	4	10,347	205	77	98	10,730
1987	NA	NA	10	7,021	278	204	261	7,774
1988	80	34	9	9,073	1,455	142	54	10,733
1989	68	23	24	7,551	384	147	81	8,187
1990	72	23	103	8,099	210	115	470	8,996
1991	95	58	42	11,483	13	81	275	11,893
1992	98	19	55	8,648	709	145	305	9,862
1993	201	141	122	14,710	3,765	642	1,265	20,503
1994	219	122	165	13,978	4,055	382	1,720	20,300
1995	111	95	98	9,563	1,191	150	723	11,726
1996	119	104	48	7,357	2,126	355	2,204	12,089
1997	126	103	28	13,442	2,678	840	2,035	19,024
1998	104	72	91	7,750	1,390	186	1,007	10,424
1999	106	88	243	9,040	1,679	136	1,191	12,290
2000	130	112	163	9,561	1,802	517	1,185	13,227
2001	135	122	171	8,633	1,859	213	2,787	13,663
2002	120	86	74	10,092	1,401	23	390	11,980
2003	146	127	267	10,989	2,256	286	1,597	15,394
2004	104	57	88	7,029	1,981	202	1,047	10,347
2005	119	100	224	8,171	2,112	353	730	11,590
2006	113	79	259	8,079	1,539	275	1,035	11,187
2007	128	83	84	10,191	1,936	165	996	13,372
2008	89	69	41	7,189	877	57	619	8,783
2009 ^a	95	82	104	6,785	1,174	137	707	8,907
2010 ^a	124	90	188	8,148	1,820	222	656	11,034
2011	95	76	52	10,578	1,458	355	1,289	13,732
2012 ^a	106	87	116	5,607	1,488	220	810	8,242
5-year average (2007–2011)	106	80	94	8,578	1,453	187	853	11,166
10-year average (2001–2011)	113	85	138	8,725	1,655	208	907	11,633
Historical average (1977–2011)	104	71	83	8,829	1,290	253	885	11,340

Source ADF&G Division of Subsistence, ASFDB 2013 (ADF&G 2013); Quimby and Owen (1994) for 1976–1979 and 1987.

- a. From 1993–2008 and 2011, post-season household surveys were conducted to supplement harvest data collected through returned permits. Limited budgets prevented administering the surveys for 2009, 2010, and 2012 likely resulting in an underestimate of subsistence harvests since not all subsistence fishing households obtained a permit. To compensate for this underestimate, the average annual harvest for the period 1999–2008 and 2011 reported during post-season surveys was added to harvests from returned permits to estimate the total subsistence harvest for 2009, 2010, and 2012.

NA Data not available. Information regarding the number of permits issued and returned was collected; however, the records containing this information no longer exist. Harvest data for these years are also recorded in ADF&G Division of Commercial Fisheries and Division of Sport Fish area management reports.

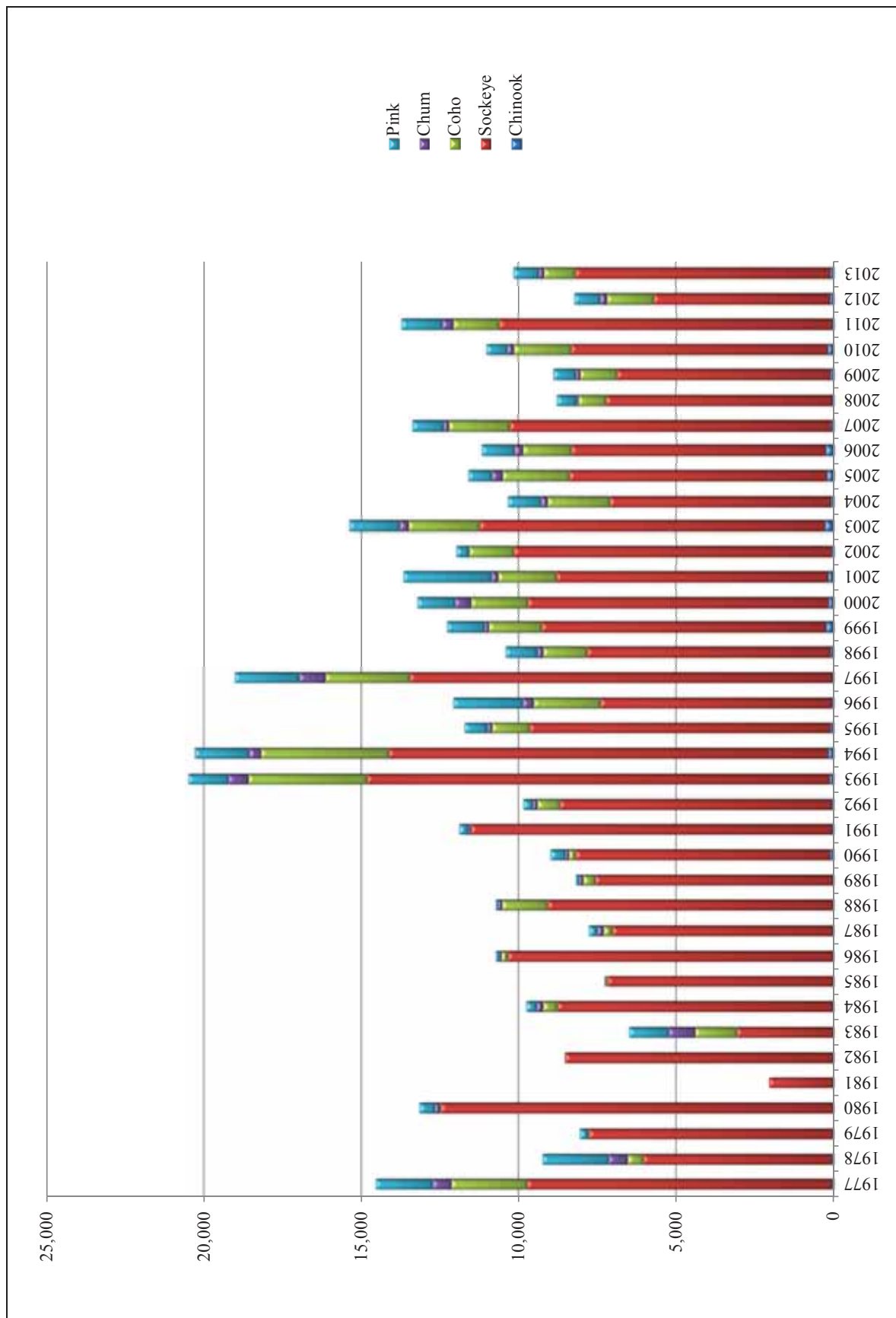


Figure 5-1.-Estimated subsistence harvests of salmon by species, Chignik Management Area, 1977–2013.

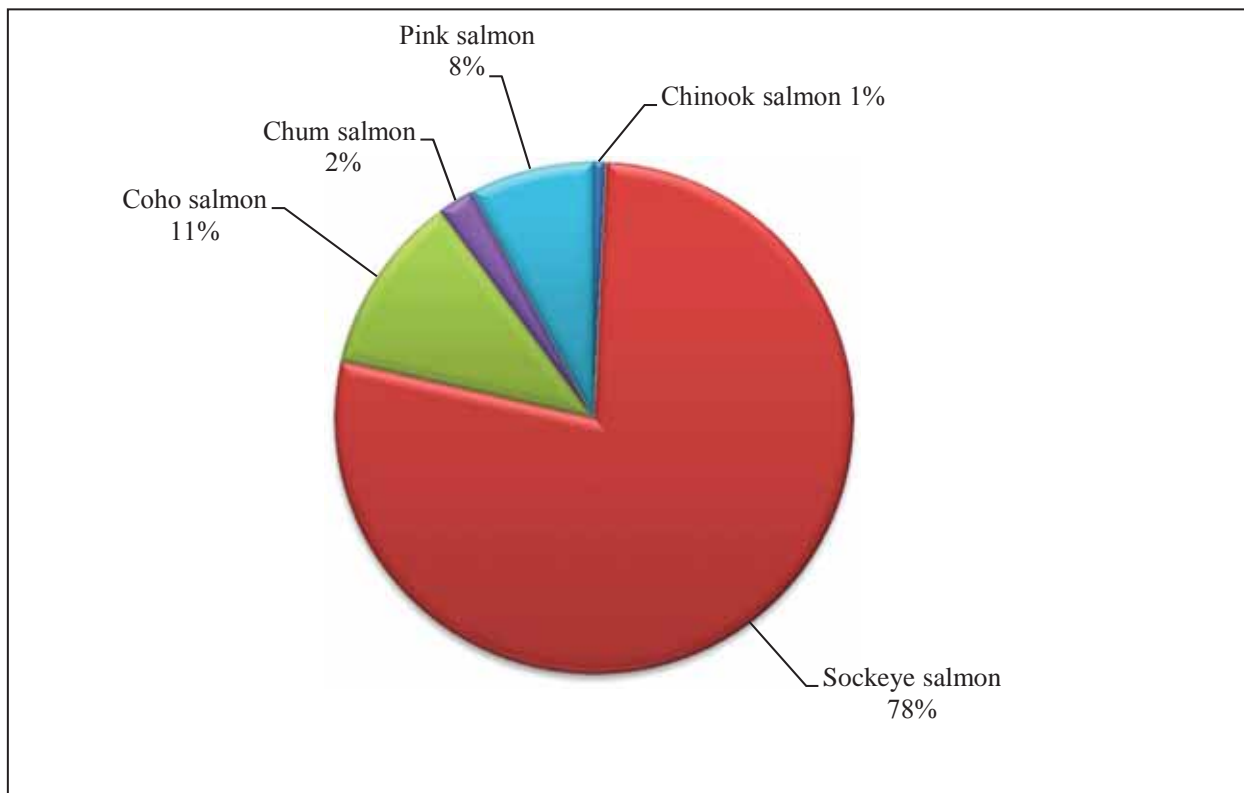


Figure 5-2.—Composition of CMA subsistence salmon harvests by species, 1977–2011.

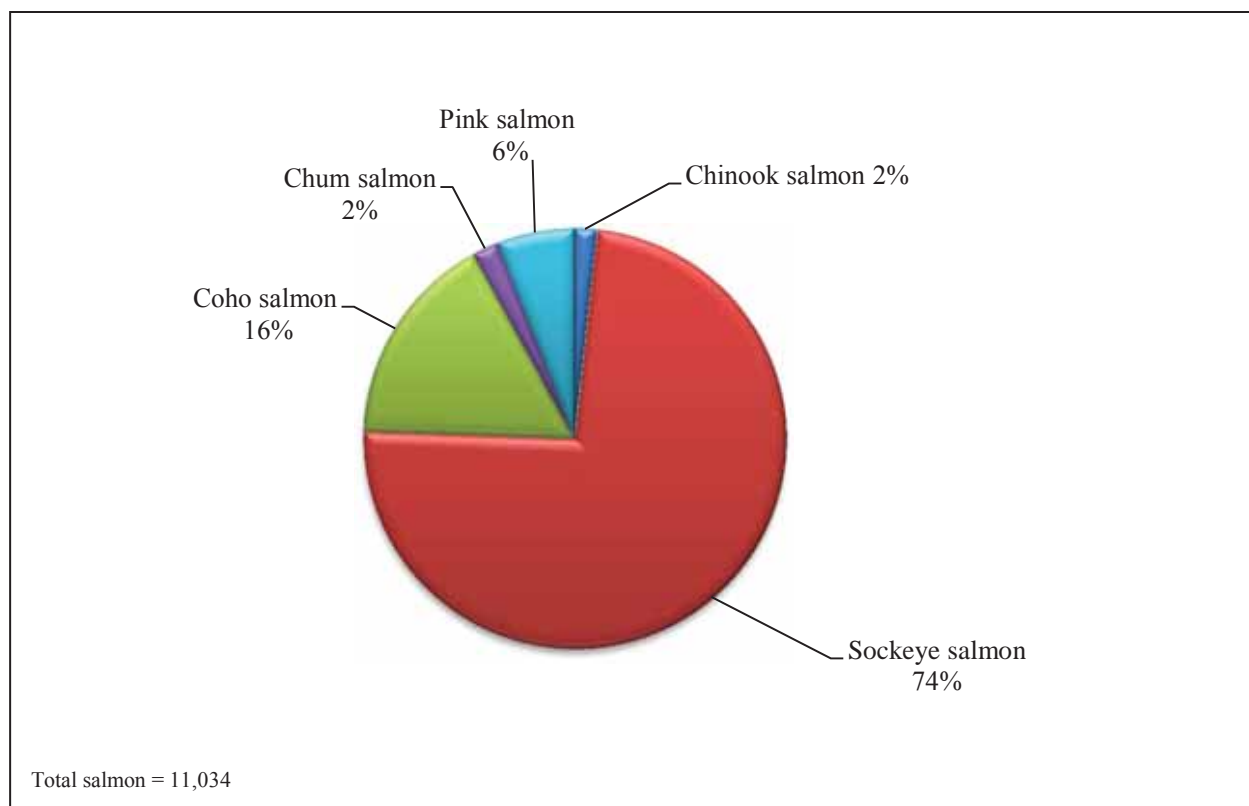


Figure 5-3.—Composition of CMA subsistence salmon harvest by species, 2010.

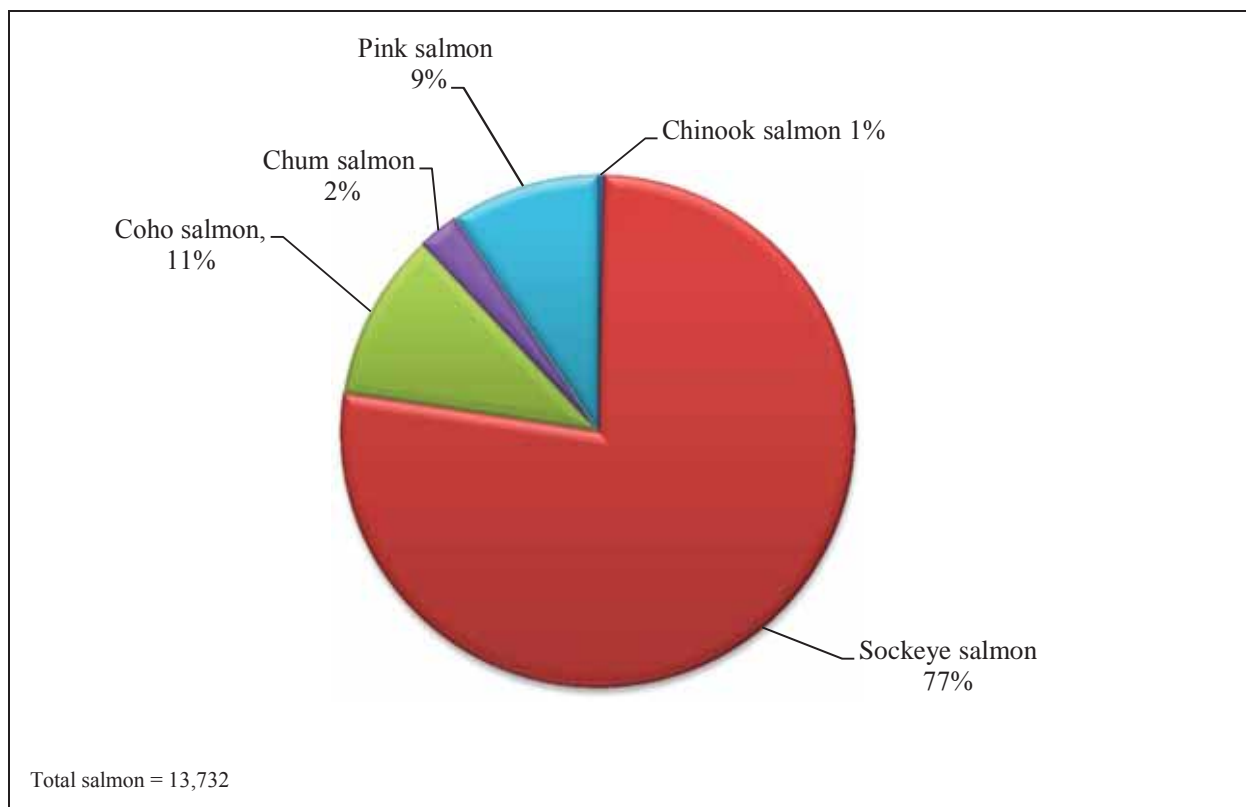


Figure 5-4.—Composition of CMA subsistence salmon harvest by species, 2011.

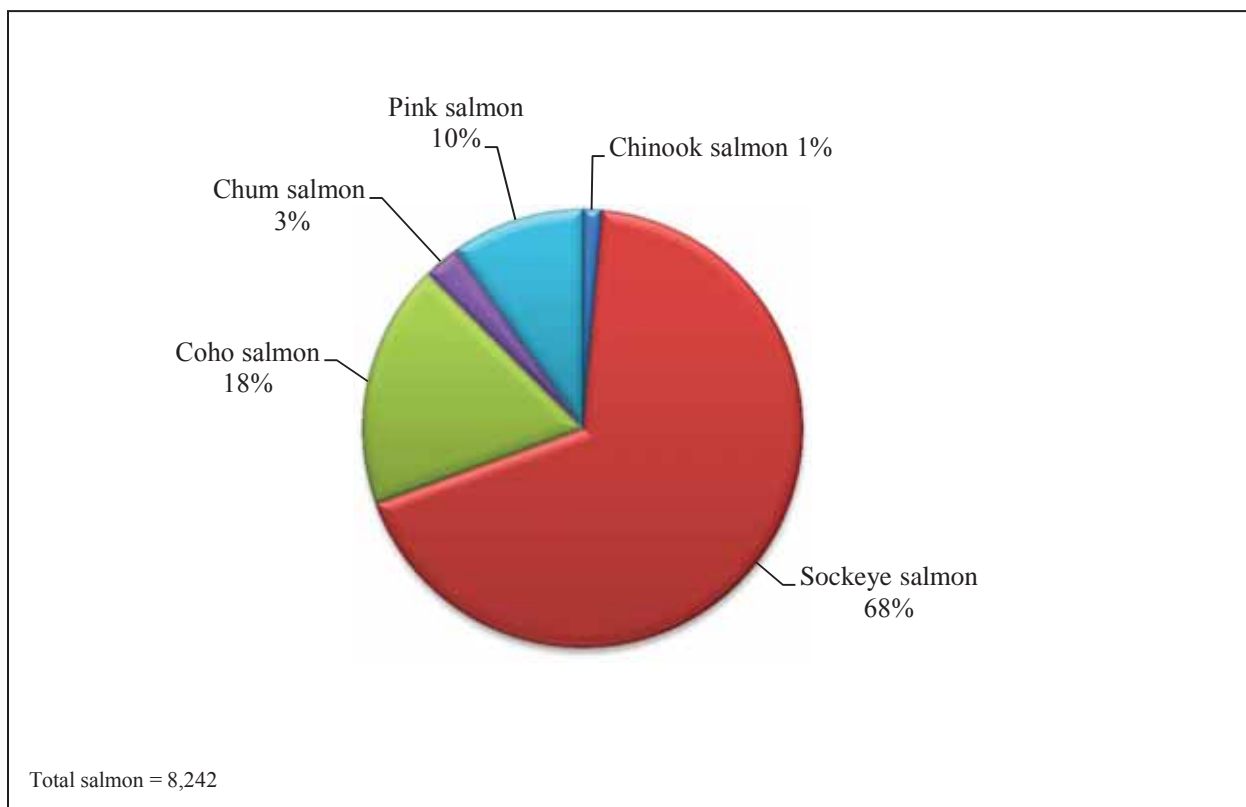


Figure 5-5.—Composition of subsistence salmon harvest by species, 2012.

study; however, when discussing the CMA in this report, previous years of permit and survey data from Ivanof Bay are included.

In 2010, 81% of all permits were issued to residents of the CMA, and residents were responsible for 87% (9,538 salmon) of the harvest. In 2011, 84% of all permits were issued to residents of the CMA and residents were responsible for 91% (12,524 salmon) of the harvest. In 2012, 75% of permits were issued to CMA residents and they were responsible for 94% (7,748 salmon) of the total harvest (tables 5-2–5-4). Residents in the CMA have consistently held the majority of the CMA subsistence salmon permits and are responsible for the majority of the reported salmon harvest each year. Although subsistence salmon permits are issued to an individual, other members of a household can acquire additional permits if more fish are needed. Therefore the number of permits per household, and per community, can vary each year and may not necessarily represent a change in population or household size.

In 2011, 95 permits were issued to subsistence fishers in the CMA, and 76 (80%) were returned to ADF&G. More permits were issued in 2010 (124) than in 2011, but the return rate in 2010 was lower (73%) than in 2011. In 2012, 106 permits were issued for the CMA and 87 (82%) permits were returned (Table 5-1), which is close to the recent 10-year average (2001–2011) of 113 permits issued and 85 permits (75%) returned. The recent 5-year average (2007–2011) was 106 permits issued and 87 (82%) returned. Since 1993, when post-salmon season household surveys were first conducted, the number of permits issued in the CMA has remained consistently higher than before the harvest surveys. In years when the Division of Subsistence has conducted post-season harvest surveys, or has been responsible for collecting permits, the return rates have been the highest (Table 5-1).

In 2010, 2011, and 2012 Perryville harvested more salmon than Chignik Lake, Chignik Lagoon, or Chignik Bay (figures 5-6–5-8). In 2011, Perryville harvested 5,254 salmon, which represented 38% of the total harvest by CMA subsistence permit holders. This was considerably higher than Perryville's estimated harvests of 3,578 salmon (43% of total recorded CMA subsistence salmon harvest) in 2012 and 2,881 salmon (26% of total recorded CMA subsistence salmon harvest) in 2010. Chignik Lake had the second largest harvest in both 2010 and 2011 with 2,636 salmon and 2,928 salmon respectively. In 2012, Chignik Bay harvested fewer salmon than any of the 4 communities with a total of 532 salmon or 7% of the total CMA salmon harvest, which was a decline of 79% from their 2011 estimated harvest and 66% less than their 2010 harvest. In 2011, Chignik Lagoon harvested a total of 1,806 salmon, which was an 18% decrease from the 2,206 fish harvested in 2010.

SALMON HARVESTS BY SPECIES

In 2011, the number of sockeye salmon harvested in the CMA by place of residency was apportioned as follows: Chignik Lake 2,809 (27%), Perryville 2,780 (26%), Chignik Bay 2,221 (21%), and Chignik Lagoon 1,559 (15%); 1,208 sockeye salmon (11%) were taken by residents of other Alaska communities (Table 5-3). Perryville's 2012 harvest of 1,607 sockeye salmon was a 42% decline from their 2011 sockeye salmon harvest of 2,780, but closer to their 2010 sockeye salmon harvest of 1,019. Chignik Lagoon residents harvested 1,771 sockeye salmon in 2012, similar to the previous year's harvest of 1,559 sockeye salmon. Chignik Lake's 2012 estimated sockeye salmon harvest (1,338) was about half (52%) what it was in 2011 (2,809, but closer to 2010's harvest of 2,521. Chignik Bay's estimated sockeye salmon harvest in 2012 (385) was 83% less than in 2011 (2,221), and 69% less than in 2010 (1,239). Researchers were told by residents of Chignik Lake and Chignik Lagoon that the late sockeye salmon runs in 2012 had poor returns, which could explain the low harvest rates. Nonlocal residents harvested an estimated 436 sockeye salmon in 2012 which marked a notable decline from the nonlocal resident's 2011 harvest of 1,208 sockeye salmon and the 2010 harvest of 1,288 sockeye salmon. Researchers were told that in 2010 and 2011 several local families had more visitors from other parts of Alaska participate in subsistence fishing than usual.

Perryville harvested the most coho salmon (1,156) in 2011, which was 79% of the total CMA coho salmon harvest. The 2011 harvest was similar to Perryville's 2010 and 2012 coho harvests, which were 1,100 and 1,094 respectively. Perryville residents also harvested the highest numbers of pink and chum salmon in

Table 5-2.—Estimated subsistence salmon harvests by community, Chignik area, 2010.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	18	8	32	1,239	263	2	11	1,548
Chignik Lagoon	23	17	78	2,011	86	0	31	2,206
Chignik Lake	24	14	34	2,521	53	4	25	2,636
Perryville	33	30	23	1,019	1,100	185	554	2,881
Ivanof Bay	2	2	1	70	182	27	32	312
Subtotal, area residents	100	71	168	6,860	1,684	218	653	9,583
Anchorage	10	7	3	739	136	4	3	884
Douglas	1	1	0	25	0	0	0	25
Fairbanks	1	1	0	65	0	0	0	65
Girdwood	1	1	1	17	0	0	0	18
Juneau	1	1	0	5	0	0	0	5
Kenai	1	1	0	7	0	0	0	7
Kodiak	6	5	0	152	0	0	0	152
Seldovia	1	1	2	128	0	0	0	130
Seward	1	1	14	150	0	0	0	164
Wasilla	1	0	0	0	0	0	0	0
Subtotal, other Alaska residents	24	19	20	1,288	136	4	3	1,451
Total	124	90	188	8,148	1,820	222	656	11,034

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2011).

Table 5-3.—Estimated subsistence salmon harvests by community, Chignik area, 2011.

Community	Permits		Estimated salmon harvest ^a					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	12	9	5	2,221	88	40	180	2,535
Chignik Lagoon	18	17	18	1,559	120	2	108	1,806
Chignik Lake	20	19	11	2,809	94	1	14	2,928
Perryville	30	22	18	2,780	1,156	312	987	5,254
Subtotal, Chignik Area residents	80	67	52	9,370	1,458	355	1,289	12,524
Anchorage	7	4	0	875	0	0	0	875
Auke Bay	1	1	0	4	0	0	0	4
Homer	2	1	0	100	0	0	0	100
Kodiak	4	2	0	116	0	0	0	116
Seldovia	1	1	0	113	0	0	0	113
Subtotal, other Alaska residents	15	9	0	1,208	0	0	0	1,208
Total	95	76	52	10,578	1,458	355	1,289	13,732

Source ADF&G Division of Subsistence, ASFDB 2012 (ADF&G 2013).

a. Harvest estimates are based on permit returns and 2011 surveys combined.

Table 5-4.—Estimated subsistence salmon harvests by community, Chignik area, 2012.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	7	7	11	385	105	12	19	532
Chignik Lagoon	19	17	61	1,771	12	2	37	1,884
Chignik Lake	16	13	16	1,338	45	3	41	1,442
Ivanof Bay	2	2	1	70	182	27	32	312
Perryville	35	27	26	1,607	1,094	172	679	3,578
Subtotal, Chignik Area residents	80	67	116	5,171	1,438	215	807	7,748
Anchorage	9	6	0	101	11	0	0	111
Haines	1	1	0	27	0	0	0	27
Homer	2	2	0	63	0	0	0	63
Juneau	1	0	0	0	0	0	0	0
Kodiak	8	8	0	141	10	4	1	156
Other USA	1	1	0	85	30	1	2	118
Ouzinkie	1	0	0	0	0	0	0	0
Palmer	1	1	0	0	0	0	0	0
Slana	1	1	0	19	0	0	0	19
Sutton	1	0	0	0	0	0	0	0
Subtotal, other Alaska residents	26	20	0	436	51	5	3	494
Total	106	87	116	5,607	1,488	220	810	8,242

Source ADF&G Division of Subsistence, ASFDB 2013 (ADF&G 2013).

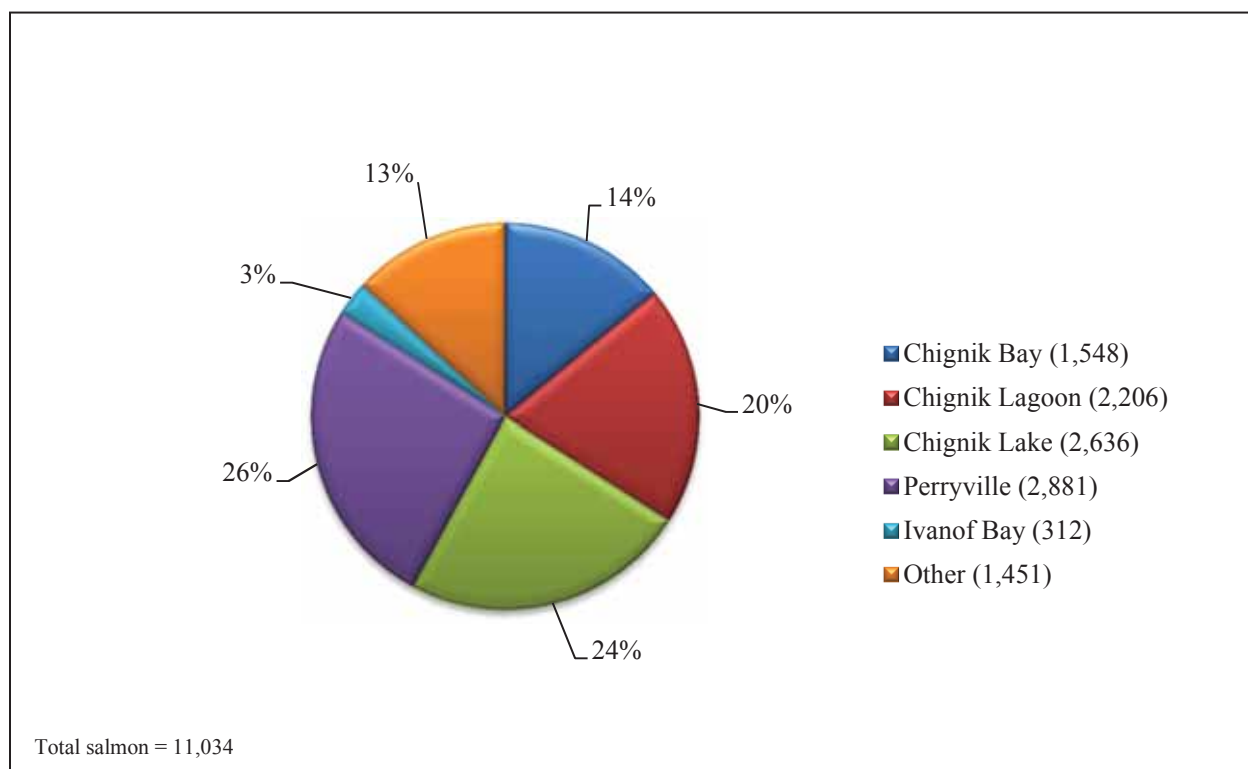


Figure 5-6.—Composition of subsistence salmon harvests by community, CMA, 2010.

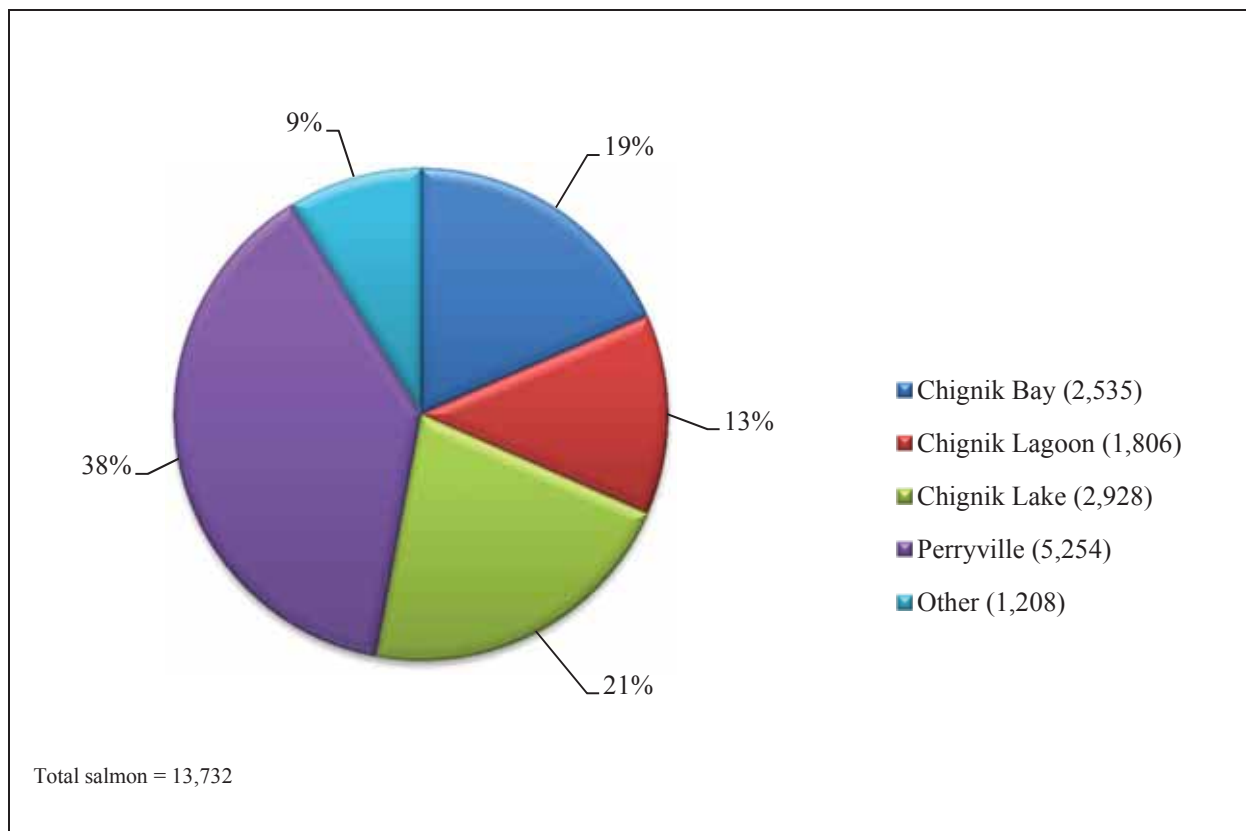


Figure 5-7.—Composition of subsistence salmon harvests by community, CMA, 2011.

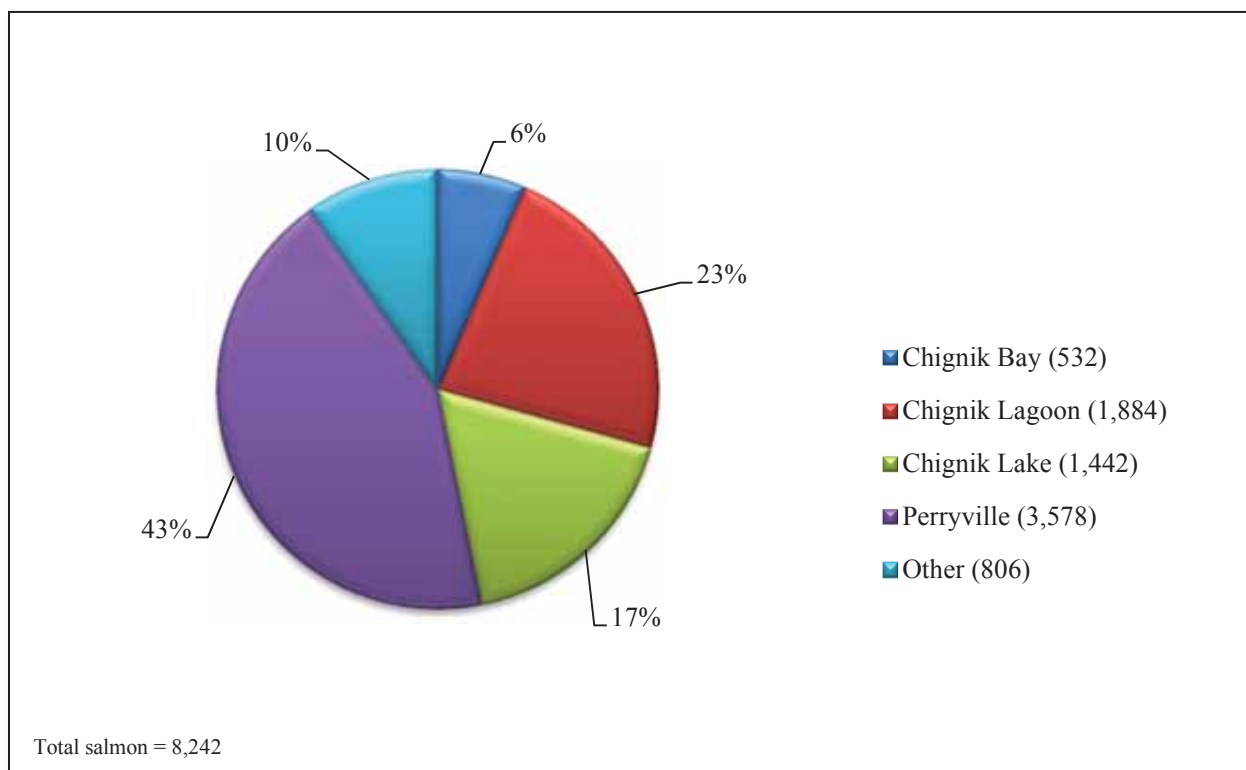


Figure 5-8.—Composition of subsistence salmon harvests by community, CMA, 2012.

2010, 2011, and 2012. Perryville was responsible for 83% (185) of the CMA's chum salmon harvest in 2010, 88% (312) in 2011, and 78% (172) in 2012. Chignik Lake, Chignik Lagoon, and Chignik Bay are all within proximity to strong sockeye salmon runs and therefore the majority of their salmon harvest is sockeye salmon. Perryville is far from the other 3 communities and the Chignik River sockeye salmon runs, but they do have local coho, pink, and chum salmon runs that they target for subsistence.

In addition, in 2011, Perryville and Chignik Lagoon residents tied with the highest amount of Chinook salmon harvested (18 fish or 35% each). In 2012, Perryville and Chignik Lagoon residents harvested 26 Chinook salmon, which was 23% of the total (52) Chinook salmon harvested in the CMA. Chignik Lagoon residents harvested the most Chinook salmon: 61 fish, representing 53% of the total (116) Chinook salmon harvested in the CMA.

LOCATION OF HARVEST

Subsistence salmon permits require people to record their harvest by species, date, quantity, and location. Table 5-5 depicts harvests by location based on returned permits. The Division of Commercial Fisheries divides the CMA into 3 harvesting subareas—Chignik Bay and Lagoon Subarea, Chignik Lake Subarea, and Perryville Subarea. The following section describes salmon harvest locations as reported on salmon harvest permits. Not all individuals who return a permit record the location of their harvest, so the numbers do not reflect the total estimated salmon harvest numbers for the CMA.

For 2012, harvest location data were provided on permit returns for a total of 4,267 fish (Table 5-5). This included 1,915 salmon in the Chignik Bay and Lagoon subarea, which represented 45% of the total reported harvest by location. Sockeye salmon made up the largest portion of the harvest in the Chignik Bay and Lagoon subarea with 1,756 fish. This represented 92% of the subarea harvest and 55% of the overall CMA sockeye salmon harvest. Therefore, approximately one-half of all CMA subsistence-harvested salmon were taken from the Chignik Bay and Lagoon subarea in 2012. The other one-half of the 2012 reported CMA subsistence salmon harvest was divided between the Chignik Lake subarea (868 salmon, 95% of which were sockeye salmon), and the Perryville subarea (1,483 salmon, 58% of which were coho, pink, and chum salmon). Subarea harvest locations are explained by the 2 sockeye salmon runs that pass Chignik Lagoon and Chignik Bay on their way to Chignik Lake and the several coho, pink, and chum spawning streams nearby the community of Perryville.

Table 5-6 shows reported CMA subsistence salmon harvests by species and date, in 2010, 2011, and 2012. Harvest dates are divided into 2 periods of time, before and after July 5, because of the early- and late-sockeye salmon runs up the Chignik River. During 2010, 2011, and 2012, the majority of subsistence harvesting took place on or after July 5. In 2010, 77% of the subsistence salmon harvest took place on or after July 5, in 2011 it was 72%, and in 2012 it was 61%. Residents said the number of sockeye salmon harvested on or after July 5 was low in 2012 because the late sockeye salmon run was exceptionally weak. Many people said that because the late run had a poor return they had to rely on fish harvested during the early run, which was not sufficient.

GEAR TYPE

Under state regulations, purse seines, hand seines, and gillnets are all allowable gear types for the harvesting of salmon for subsistence in the CMA. Subsistence salmon permits for the CMA do not require that fishers record their gear type. However, when the Division of Subsistence conducts subsistence salmon harvest surveys gear type is recorded and will be discussed in the following chapter.

THE UTILITY OF ANNUAL PERMIT DATA

Collecting subsistence salmon permit data each year is helpful in illustrating how subsistence harvests and uses change over the course of time. In 2012, permit data show that Chignik residents were not harvesting nearly as much sockeye salmon as they typically do after July 5, and therefore their overall harvest numbers

were down. Permit data also show that Perryville residents needed to compensate for their poor coho salmon returns by having commercial fishers bring sockeye salmon from Chignik Lagoon.

Poor permit returns create a less accurate description of the subsistence salmon harvest in the CMA and make it difficult for the Board of Fisheries to determine if reasonable opportunity for success is being provided for residents to meet their needs, as defined by ANS findings. It is important for ADF&G to maintain a good relationship with the communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville, so residents understand the importance and reasoning behind the permitting system.

Table 5-5.—Chignik area subsistence salmon harvests by species and subarea of harvest, 2012.

Subarea of harvest ^a	Estimated salmon harvest ^b					Total
	Chinook	Sockeye	Coho	Chum	Pink	
Chignik Bay and Lagoon	41	1,756	55	7	56	1,915
Chignik Bay	0	87	10	4	0	101
Chignik Lagoon	41	1,669	45	3	56	1,814
Chignik Lake	2	824	17	9	16	868
Chignik Lake	2	160	0	0	12	175
Chignik River	0	470	17	9	4	500
Clark River	0	26	0	0	0	26
Mouth of Clark River	0	168	0	0	0	168
Perryville	22	597	601	107	156	1,483
Ivanof Bay	0	200	469	28	6	703
Perryville Area	22	397	133	79	149	780
Total	66	3,176	673	124	228	4,267

Source ADF&G Division of Subsistence, ASFDB 2013 (ADF&G 2013).

a. The Chignik Bay–Lagoon Subarea corresponds to the portion of the Central District and the Chignik Bay District, not including any of the Chignik River from the outlet of Chignik Lake (“FRI Point” to the river’s outlet at Mensis Point in Chignik Lagoon). The Chignik Lake Subarea includes subsistence harvests in the Chignik River from Mensis Point in Chignik Lagoon up to Black Lake. The Perryville Subarea corresponds to the Perryville and Western districts, including Ivanof Bay, Mitrofan Bay, the Kametolook River, and other streams near Perryville and Ivanof Bay. In recent years there have been no subsistence harvests reported for the Eastern District.

b. Harvest estimates are based on 2012 permit returns only. Of 73 permits issued for the Chignik Area, 54 permits were returned (74%).

Table 5-6.—Chignik area subsistence salmon harvests by species and date, 2010–2012.

		Estimated salmon harvest ^a					
Date and year		Chinook	Sockeye	Coho	Chum	Pink	Total
<i>Harvest before 7/5</i>							
	2010	13	1,366	9	22	28	1,438
	2011	21	3,407	177	65	215	3,886
	2012	12	1,419	107	42	91	1,671
Three-year mean		15	2,064	98	43	111	2,332
<i>Harvest on or after 7/5</i>							
	2010	94	3,543	1,009	128	142	4,915
	2011	30	7,171	1,280	290	1,074	9,846
	2012	53	1,759	566	82	136	2,597
Three-year mean		59	4,158	952	167	451	5,786

Source ADF&G Division of Subsistence, ASFDB 2013 (ADF&G 2013).

a. Harvest estimates based on both permits and surveys for 2011.

6. 2011 HOUSEHOLD SURVEYS AND MAPPING

Annual subsistence salmon harvest estimates for Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville are based on data from returned subsistence salmon permits as described in the previous chapter. However, in years when subsistence salmon harvest surveys are conducted, estimates are based on the permit data combined with the harvest survey data. In 1984, 1989, 1991, 2003, and again in 2011, Division of Subsistence researchers conducted household harvest surveys that included questions about salmon in each of the 4 communities. Household harvest surveys are conducted with the intention of capturing the harvests of residents who did not obtain permits, did not return permits, or who may have incompletely reported their harvest on their returned permit.

One objective of this study was to conduct salmon harvest surveys and accurately depict 2 years of the subsistence salmon harvest for Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville. However, the cost of airfare and lodging in these communities increased significantly between the time when the proposal was written and when the research began, causing budgetary restrictions. Researchers were only able to conduct harvest surveys for 1 year due to these limitations.

In 2012, researchers conducted subsistence salmon harvest surveys and mapping sessions with a census of available households in Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville to collect data from the 2011 calendar year. Surveys were conducted in person, and data involving demographics, harvest and usage, sharing patterns, and other aspects of subsistence fishing were captured at the household level to protect individual harvesters from being identified. Following Division of Subsistence protocols, individual survey responses are kept anonymous and strictly confidential. The following sections present an analysis of survey and mapping data from each of the 4 study communities.

2011 SUBSISTENCE SALMON HARVEST SURVEYS RESULTS: CHIGNIK BAY

Demographic Data

Demographic characteristics collected by researchers during the 2011 harvest survey are described in Table 6-1. In the community of Chignik Bay, there were an estimated 77 residents, of which 46 (60%) identified themselves as being of Alaska Native descent. Males represented 57% (44) of the population, females represented 43% (33), and the average age for all residents was 34 years. In 2011, Chignik Bay had an estimated 26 occupied households, with an average house size of 3 people (tables 1-1 and 6-1).

Chignik Bay Salmon Harvest, Use, and Sharing Patterns

The estimates of salmon harvest and use by Chignik Bay residents in 2011 are described in Table 6-2. All salmon species are reported in pounds usable weight and amounts (see Appendix C for conversion factors). The harvest category includes the combined salmon harvested by all households during 2011. The use category includes all salmon harvested, received, given away, and/or used by all households. Purchased salmon is not included within the harvest or use categories.

In 2011, 91% of households in Chignik Bay reported using salmon, 65% of households attempted to harvest salmon, 61% harvested salmon, 52% of harvesting households gave away salmon, and 48% received salmon. All 5 species of Pacific salmon found in Alaska were used, harvested, and shared by Chignik Bay households in 2011. Sockeye salmon was the most used and shared species by Chignik Bay residents in 2011 with 91% of all households using, 65% attempting to harvest, 61% harvesting, 48% giving away and 44% receiving sockeye salmon. Chinook salmon was the second most used and shared salmon by Chignik Bay residents, with 44% using, 26% harvesting, 26% giving away and 22% receiving Chinook salmon. Coho salmon was used by 44% of Chignik Bay households and 30% of households reported receiving coho

Table 6-1.—Demographic and sample characteristics, of samples communities, 2011.

Characteristics	Chignik Bay	Chignik Lagoon	Chignik Lake	Perryville
Sampled households	23	20	22	29
Eligible households	26	23	27	34
Percentage sampled	88.5%	87.0%	81.5%	85.3%
Sampled population	68	53	75	86
Estimated population	77	61	92	101
Percent of population sampled	88.5%	87.0%	81.5%	85.3%
Household size				
Mean	3.0	2.7	3.4	3.1
Minimum	1	1	1	1
Maximum	7	5	7	9
Age				
Mean	34.2	36.5	35.1	34.0
Minimum ^a	1	2	0	0
Maximum	80	93	91	95
Median	35	35	30	28
Sex				
Estimated male				
Number	44.1	28.8	45.4	51.0
Percentage	57.4%	47.2%	49.3%	50.6%
Estimated female				
Number	32.8	32.2	46.7	49.8
Percentage	42.6%	52.8%	50.7%	49.4%
Alaska Native				
Estimated households ^b				
Number	20.3	19.6	25.7	31.6
Percentage	78.3%	85.0%	95.2%	92.9%
Estimated population				
Number	46.4	44.9	90.7	98.3
Percentage	60.3%	73.6%	98.6%	97.5%

Source ADF&G Division of Subsistence household survey, 2011.

a. A minimum age of 0 (zero) is used for infants that are less than 1 year of age.

b. The estimated number of households in which at least one head of household is Alaska Native.

salmon. Pink salmon (22%) and chum salmon (13%) were used the least of all species in Chignik Bay in 2011 (Table 6-2).

Chignik Bay Salmon Harvest Quantities and Species Composition

In 2011, a total of 3,019 salmon (16,249 lb) were harvested by Chignik Bay residents (Table 6-2). This equated to an average of 116 salmon (625 lb) per household and 39 salmon (211 lb) per capita. Sockeye represented 89% (2,714 individual fish) of Chignik Bay's total salmon harvest by weight in 2011, of which 84% (13,640 lb; 2,573 individual fish) of the overall harvest were "bright" sockeye salmon, and 5% (749 lb; 141 individual fish) were spawning sockeye salmon. Chinook salmon was Chignik Bay's second most harvested salmon species representing 7% of the community harvest by weight (1,093 lb; 127 individual fish), followed by coho salmon representing 3% (446 lb; 88 individual fish), and chum and pink salmon representing 1% and less than 1%, respectively. Given their access to the strong sockeye salmon run returning to Chignik River, sockeye salmon is both available to and preferred by residents of Chignik Bay (Table 6-2; Figure 6-1),

Salmon Harvests by Gear Type

Subsistence salmon permits do not require fishers to record gear type; however, researchers conducting subsistence salmon harvest surveys do ask about gear type. In 2011, 66% of all salmon harvested by Chignik Bay residents were harvested with subsistence gear (21% by gillnet and 45% by seine), less than 1% with rod and reel or hook and line (jig), and 34% were removed from commercial catches (Table 14). Sixty-nine percent of the sockeye salmon catch was harvested with subsistence gear (21% by gillnet and 49% by seine) and 30% was removed from commercial catches. Chinook salmon were almost all (96%) removed from commercial catches in 2011, with only 4% taken with subsistence gear (gillnets). In 2011, no Chinook salmon were harvested with a rod and reel. Coho salmon, however, were harvested primarily by rod and reel (44%). Pink and chum salmon were also harvested with subsistence seine and gillnet gear (Table 6-3; Figure 6-2).

Species, Gear, Processing, and Seasons

Sockeye salmon that return to the Chignik River have historically been separated by ADF&G managers into 2 distinct runs. The first run was said to peak in mid-June and the second run was said to peak in mid- to late July (Anderson and Nichols; 2012). Sockeye salmon are harvested for subsistence as early as late April in the Chignik Lagoon and Chignik River, and as late as February in Clark River, a tributary of Chignik Lake.

Chignik Bay residents prefer to harvest and process early-run sockeye salmon from the end of May to early June prior to the first CMA commercial salmon opening. The best time to obtain their subsistence salmon is immediately prior to the commercial opening when their boats are prepared for the commercial season. Sockeye salmon from the first run are generally harvested in Chignik Bay using commercial purse seine gear or gillnets set off a beach near the community. The late sockeye salmon run begins in early July and Chignik Bay residents who are not commercial fishers harvest them with subsistence gear from the beaches. However, over one-third of Chignik Bay's subsistence sockeye salmon harvest in 2011 was obtained by removal from commercial harvests (Table 6-3).

Residents of all 4 Chignik communities begin harvesting late-run sockeye salmon in early July and continue through the winter months. Bright sockeye salmon from the second run can be harvested into October, followed by the harvest of spawning and spawned-out sockeye salmon through the late fall and early winter months into January. From October through January, the sockeye salmon flesh starts to turn red as the fish get farther up river. Local residents refer to these as "redfish." Spawning sockeye salmon are generally harvested with a beach seine rather than a gillnet, because the larger mesh will damage the fish's soft flesh. Once the sockeye salmon have spawned, they are referred to as "spawned-outs." Fishing for spawned-outs is generally done upriver of the community of Chignik Lake in shallow water tributaries, particularly in

Table 6-2.-Estimated harvests and uses of salmon, Chignik Bay, Alaska, 2011.

Resource	Percentage of households					Harvest weight (lb)				Harvest amount		95% confidence limit (±)
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean		Total	Unit household		
							household	Per capita				
Salmon	91.3	65.2	60.9	47.8	52.2	16,249.2	625.0	211.4	3,019.4	ind	116.1	22.7
Chum salmon	13.0	13.0	13.0	0.0	4.3	202.1	7.8	2.6	39.6	ind	1.5	44.7
Coho salmon	43.5	21.7	21.7	30.4	17.4	445.7	17.1	5.8	88.2	ind	3.4	33.5
Chinook salmon	43.5	26.1	26.1	21.7	26.1	1,093.9	42.1	14.2	126.6	ind	4.9	41.3
Pink salmon	21.7	17.4	13.0	8.7	8.7	118.3	4.5	1.5	50.9	ind	2.0	40.4
Sockeye salmon	91.3	65.2	60.9	43.5	47.8	14,389.2	553.4	187.2	2,714.2	ind	104.4	22.3

Source ADF&G Division of Subsistence household surveys, 2012.

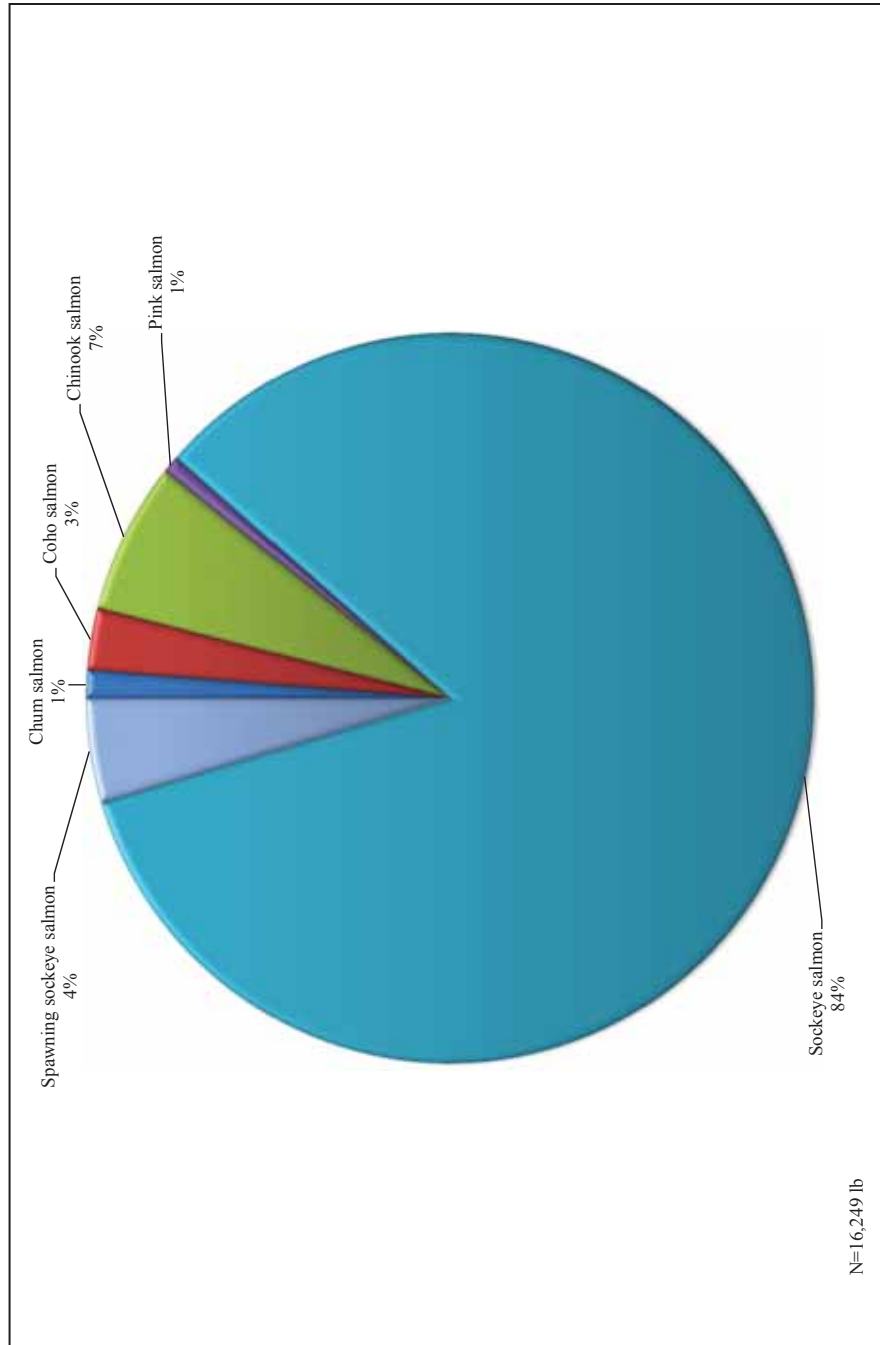


Figure 6-1.-Pounds of salmon harvested by community of Chignik Bay, 2011.

Table 6-3.-Estimated percentages of salmon harvested by gear type, resource, and total nonsalmon fish harvest, Chignik Bay, Alaska, 2011.

Resource	Percentage base	Removed from commercial catch		Subsistence methods										Rod and reel		Jig		Any method	
		Subsistence gear, any method		Seine		Subsistence Gillnet		Rod and reel		Jig		Any method							
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.				
Resource Salmon	Gear Type	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%		
	Resource	31.5%	33.6%	21.4%	20.7%	46.1%	45.0%	67.4%	65.6%	1.0%	0.8%	1.0%	0.8%	0.0%	0.0%	100.0%	100.0%		
	Total	31.5%	33.6%	21.4%	20.7%	46.1%	45.0%	67.4%	65.6%	1.0%	0.8%	1.0%	0.8%	0.0%	0.0%	100.0%	100.0%		
Chum salmon	Gear Type	0.0%	0.0%	1.8%	1.7%	1.6%	1.6%	1.7%	1.6%	17.9%	22.2%	17.9%	22.2%	0.0%	0.0%	1.3%	1.2%		
	Resource	0.0%	0.0%	28.6%	28.6%	57.1%	57.1%	85.7%	85.7%	14.3%	14.3%	14.3%	14.3%	0.0%	0.0%	100.0%	100.0%		
	Total	0.0%	0.0%	0.4%	0.4%	0.7%	0.7%	1.1%	1.1%	0.2%	0.2%	0.2%	0.2%	0.0%	0.0%	1.3%	1.2%		
Coho salmon	Gear Type	0.2%	0.2%	8.1%	7.8%	1.6%	1.6%	3.7%	3.5%	35.7%	43.9%	35.7%	43.9%	0.0%	0.0%	2.9%	2.7%		
	Resource	2.6%	2.6%	59.0%	59.0%	25.6%	25.6%	84.6%	84.6%	12.8%	12.8%	12.8%	12.8%	0.0%	0.0%	100.0%	100.0%		
	Total	0.1%	0.1%	1.7%	1.6%	0.7%	0.7%	2.5%	2.3%	0.4%	0.4%	0.4%	0.4%	0.0%	0.0%	2.9%	2.7%		
Chinook salmon	Gear Type	12.8%	19.3%	0.0%	0.0%	0.3%	0.5%	0.2%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	6.7%		
	Resource	96.4%	96.4%	0.0%	0.0%	3.6%	3.6%	3.6%	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%		
	Total	4.0%	6.5%	0.0%	0.0%	0.1%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	6.7%		
Pink salmon	Gear Type	0.0%	0.0%	2.6%	1.2%	1.6%	0.7%	1.9%	0.9%	35.7%	20.2%	35.7%	20.2%	0.0%	0.0%	1.7%	0.7%		
	Resource	0.0%	0.0%	33.3%	33.3%	44.4%	44.4%	77.8%	77.8%	22.2%	22.2%	22.2%	22.2%	0.0%	0.0%	100.0%	100.0%		
	Total	0.0%	0.0%	0.6%	0.2%	0.7%	0.3%	1.3%	0.6%	0.4%	0.2%	0.4%	0.2%	0.0%	0.0%	1.7%	0.7%		
Sockeye salmon	Gear Type	86.9%	80.4%	87.6%	89.3%	94.8%	95.6%	92.5%	93.6%	10.7%	13.8%	10.7%	13.8%	0.0%	0.0%	89.9%	88.6%		
	Resource	30.5%	30.5%	20.8%	20.8%	48.6%	48.6%	69.4%	69.4%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	100.0%	100.0%		
	Total	27.4%	27.0%	18.7%	18.4%	43.7%	43.0%	62.4%	61.4%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	89.9%	88.6%		

Source ADF&G Division of Subsistence household survey, 2012.

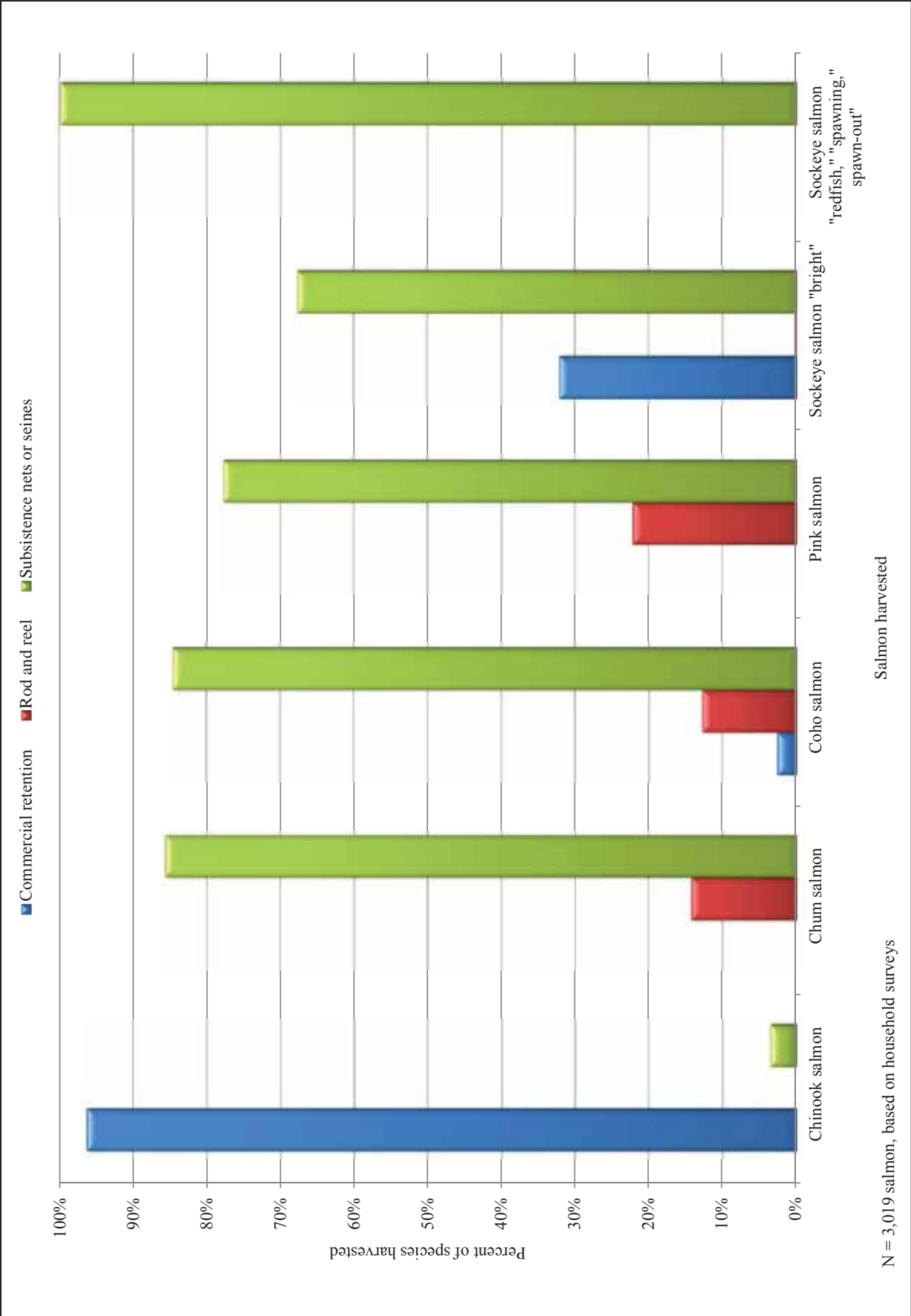


Figure 6-2.—Estimated percentages of salmon harvests by species and gear type for subsistence home use, Chignik Bay, 2011.

Clark River using a handmade jig that consists of a long nylon line with a treble hook attached. Many local fishers prefer this method because it is a selective fishing method, and it will not snag like a net would in the shallow water. Residents say they harvest spawned-outs in Clark River (Figure 1-3) as late as February. Local subsistence users like to harvest these salmon after the first freeze because it kills off flies that lay their eggs in hanging fish. Redfish are generally smoked, canned, or frozen as fillets. Spawned-outs are dried because they have a low fat content, and drying prevents spoilage.

Chignik Bay Subsistence Needs Assessment

Survey respondents were asked a series of assessment questions to determine how they perceive their subsistence harvest and use have changed over time. Survey respondents were asked to assess whether their use and harvest in the 2011 study year was less, the same, or more than in recent years. “Other recent years” was defined as the previous 5 years.

The majority of households in Chignik Bay (15 households or 65%) said they used the same amount of salmon in 2011 as in recent years (Table 6-4). Twenty-six percent of all households said they used less salmon than in recent years and 9% said they used more. When a respondent answered either as having used less or more salmon than in recent years they were prompted as to why. Chignik Bay residents who used less or more salmon were did not provide an answer as to why their use was different (tables 6-5 and 6-6).

Respondents were also asked if they harvested and/or received enough salmon in 2011 to meet their subsistence needs (Table 6-7). Negative responses prompted researchers to ask respondents what level of impact not getting enough salmon had on their household (Table 6-7). In Chignik Bay, only 2 households (8.7%) said they did not get enough salmon to meet their needs in 2011, and both said the impact was minor. One of these households said that to make up for the shortage of subsistence salmon they were “using more commercial foods” (Table 6-8).

Current and Historical Harvest Areas

In 1984 and 1985, Division of Subsistence researchers mapped community subsistence salmon fishing areas with representatives of the community of Chignik Bay (ADF&G 1985; Morris 1987; Fall et al. 1995). The areas marked on the map in Figure 6-3 were identified by local respondents as areas that had been used regularly during the 20-year period from the mid-1960s into the 1980s (Fall et al. 1995; Hutchinson-Scarborough et al. 1996). Figure 6-3 shows that the entirety of Chignik Lake and Chignik Lagoon were being used by Chignik Bay (Chignik) residents from the 1960s through the 1980s.

The CMA subsistence salmon harvest use areas were updated in 2012, in conjunction with the community household salmon surveys that were conducted as a component to this ethnographic study. Households in Chignik Bay that indicated during the household survey that they harvested salmon in 2011 were asked to mark the areas where they fished, as well as species harvested, gear used, and approximate harvest date (figures 6-4 and 6-5). Figure 6-4 indicates the community of Chignik Bay’s harvest locations of all species in 2011, and Figure 6-5 shows the community of Chignik Bay’s sockeye salmon harvests by gear type in 2011. See Appendix D for additional harvest area maps by other species of salmon and gear used. Harvest areas remain consistent with the mapping conducted in 2012 representing the 2011 study year.

2011 SUBSISTENCE SALMON HARVEST SURVEYS RESULTS: CHIGNIK LAGOON

Demographic Data

The community of Chignik Lagoon had an estimated 61 residents in 2011, of which 45 (74%) identified as being of Alaska Native descent (Table 6-1). Males represented 47% (29) of the total Chignik Lagoon population and females made up 53% (32). The average age of Chignik Lagoon residents was 37 years. In 2011, Chignik Lagoon had an estimated 23 occupied households and an average house size of 3.

Table 6-4.—Changes in household uses of salmon compared to recent years, Chignik Bay, 2011.

Resource category	Sampled households	Valid responses ^a	Households reporting use					
			Less		Same		More	
			Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	23	6	26.1%	15	65.2%	2	8.7%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-5.—Reasons for less household uses of salmon compared to recent years, Chignik Bay, 2011.

Resource category	Valid responses ^a	Households reporting reasons for less use															
		Family/personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/environment	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

-continued-

Table 16.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for less use															
		Working/no time		Regulations		Small/diseased animals		Did not get enough		Did not need		Equipment/fuel expense		Used other resources		Other reasons	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-6.—Reasons for More household uses of salmon compared to recent years, Chignik Bay, 2011.

Resource category	Valid responses ^a	Households reporting reasons for more use															
		Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help			
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

-continued-

Table 17.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for more use															
		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/fixed equipment		Other reasons			
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-7.—Reported impact to households responding that did not get enough salmon, Chignik Bay, 2011.

Resource	Sampled households	Households getting enough salmon				Impact to those not getting enough salmon							
		Valid responses		Did not get enough		No response		Not noticeable		Minor		Major	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	23	100.0%	2	8.7%	0	0.0%	0	0.0%	2	100.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2011.

Table 6-8.—What households reported doing differently due to not getting enough salmon, all communities, 2011.

	Salmon											
	Chignik Bay			Chignik Lagoon			Chignik Lake			Perryville		
	Number	Percentage		Number	Percentage		Number	Percentage		Number	Percentage	
Did differently	1	100.0%		8	100.0%		5	100.0%		12	100.0%	
Provided valid response for doing something differently	0	0.0%		0	0.0%		0	0.0%		1	8.3%	
Bought the resource	1	100.0%		3	37.5%		4	80.0%		7	58.3%	
Used commercial foods	0	0.0%		4	50.0%		1	20.0%		2	16.7%	
Used other subsistence foods	0	0.0%		1	12.5%		1	20.0%		2	16.7%	
Asked others for help	0	0.0%		1	12.5%		0	0.0%		0	0.0%	
Made due without	0	0.0%		0	0.0%		0	0.0%		0	0.0%	
Invested more effort to get enough	0	0.0%		0	0.0%		0	0.0%		0	0.0%	
Got a job	0	0.0%		0	0.0%		0	0.0%		1	8.3%	
Used other foods	0	0.0%		0	0.0%		0	0.0%		0	0.0%	
Applied for public assistance	0	0.0%		0	0.0%		0	0.0%		0	0.0%	

Source ADF&G Division of Subsistence household surveys, 2012.

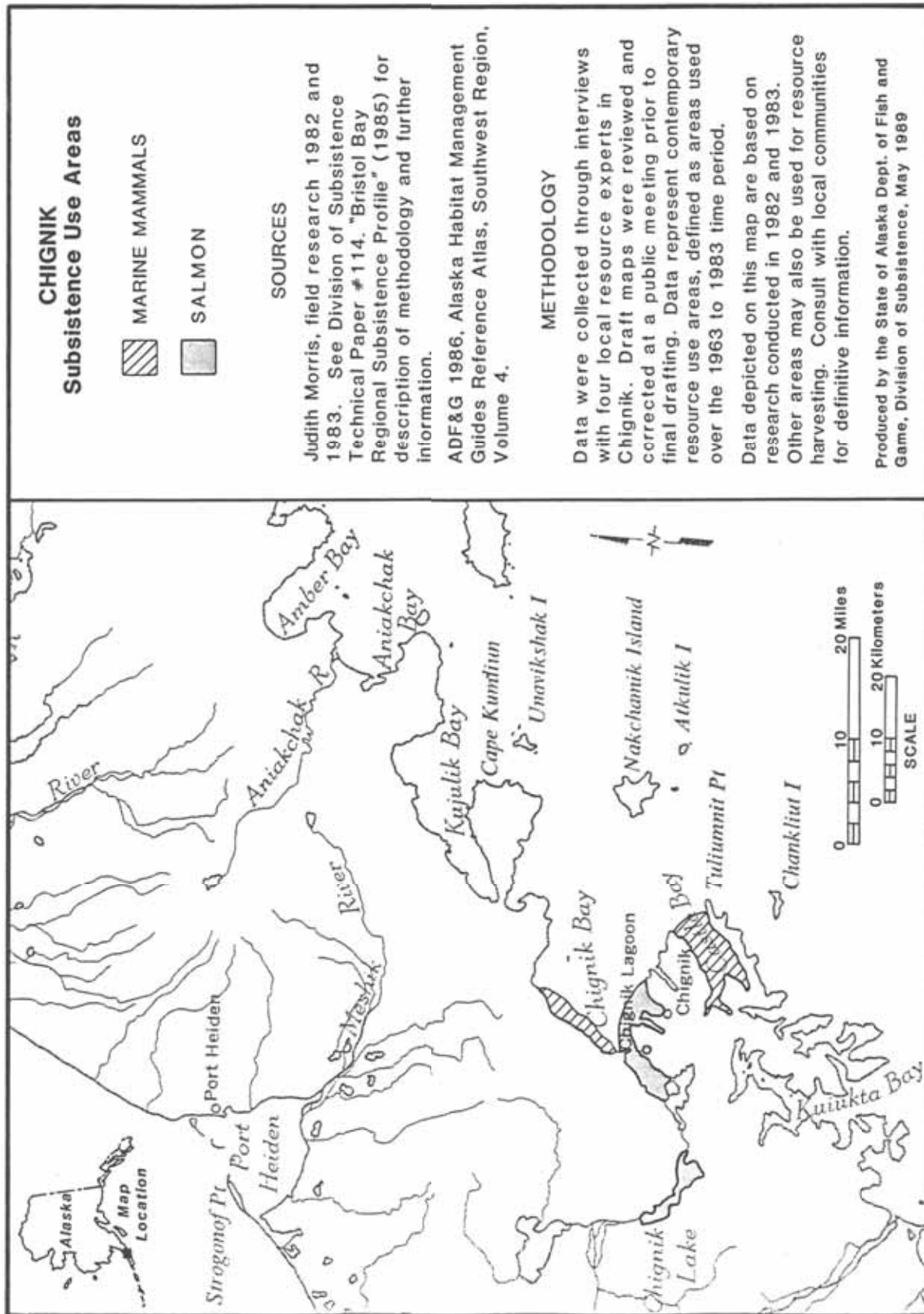


Figure 6-3.—Salmon harvest locations, Chignik Bay, 1985–1986.

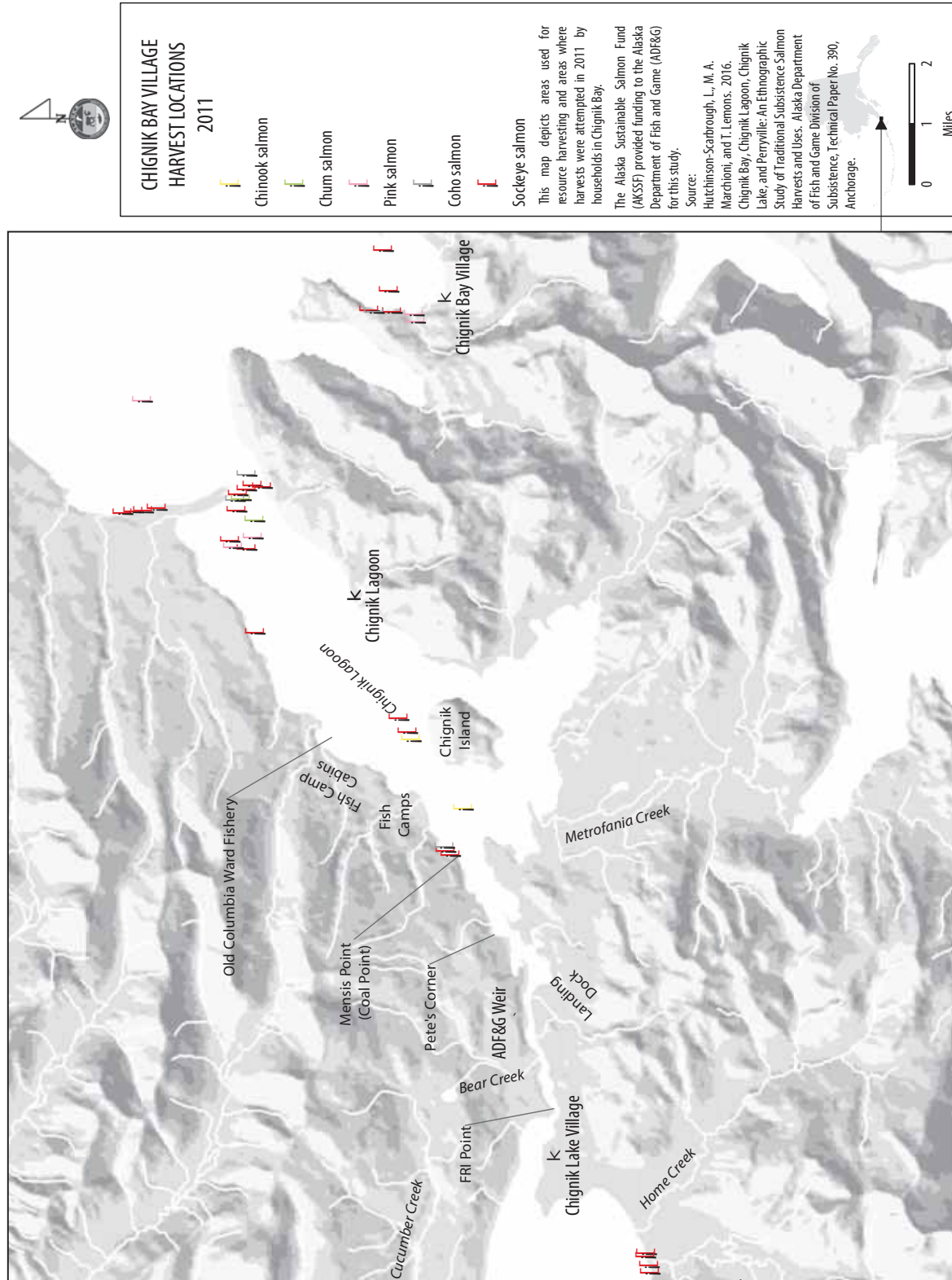


Figure 6-4. –Salmon harvest locations, Chignik Bay, 2011.

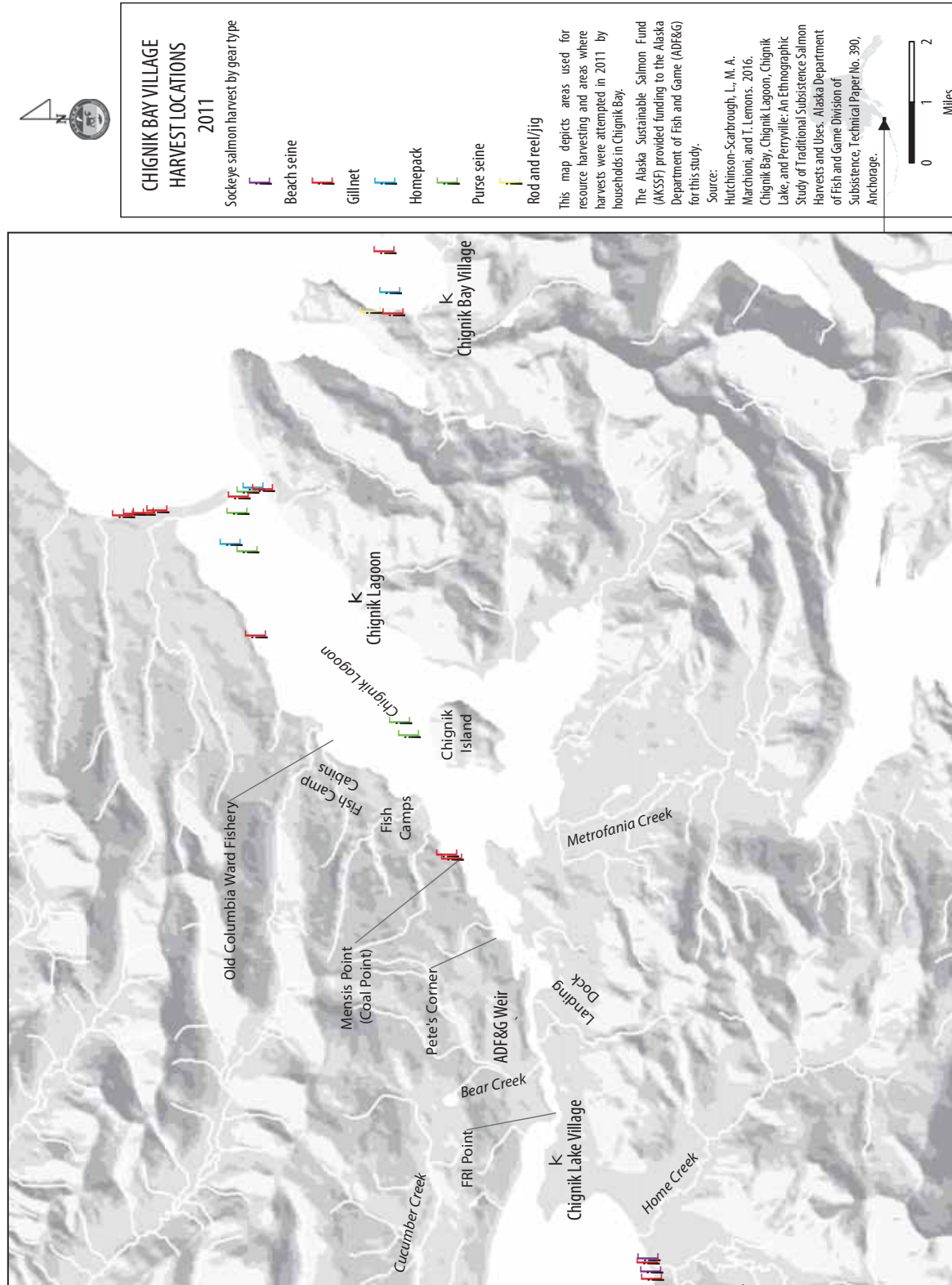


Figure 6-5. –Sockeye salmon harvest by gear type, Chignik Bay, 2011.

Chignik Lagoon Salmon Harvest, Use, and Sharing Patterns

Salmon harvest and use estimates by Chignik Lagoon residents in 2011 are described in Table 6-9. All salmon species are reported in pounds usable weight and amount (see Appendix C for conversion factors). The harvest category includes salmon harvested by all households during 2011. The use category includes all salmon harvested, received, given away and/or used by all households. Purchased salmon is not included within the harvest or use categories.

In 2011, 95% of households in Chignik Lagoon reported using salmon, 75% of households attempted to harvest salmon, and 65% of harvesting households both gave away and received salmon. All 5 species of Pacific salmon found in Alaska were used, harvested, and shared by Chignik Lagoon households in 2011. Sockeye salmon was the most used and shared species by Chignik Lagoon residents in 2011 with 95% of all households using, 75% attempting to harvest, 70% harvesting, 65% giving away and 55% receiving sockeye salmon. Chinook salmon was the second most used and shared salmon by Chignik Lagoon residents, with 65% using, 50% harvesting, 15% giving away, and 25% receiving Chinook salmon. Coho salmon was used by 30% of Chignik Lagoon households, pink salmon was used by 35%, and chum salmon was used by 15% (Table 20).

Chignik Lagoon Salmon Harvest Quantities and Species Composition

In 2011, Chignik Lagoon residents reported a total harvest of 1,778 salmon (9,639 lb). Chignik Lagoon residents harvested an average of 77 salmon (419 lb per household) and 29 salmon (158 lb) per capita. Sockeye salmon represented 78% (1,425 individual fish) of Chignik Lagoon's total salmon harvest by weight in 2011. "Bright" sockeye salmon composed 75% (7,280 lb; 1,373 individual fish) of the overall harvest, and spawning sockeye salmon composed 3% (274 lb; 52 individual fish). Chinook salmon was Chignik Lagoon's second most harvested salmon species at 16% (1,500 lb; 174 individual fish), followed by coho salmon 3% (305 lb; 305 individual fish), and pink salmon 3% (273 lb; 117) individual fish. Chum salmon made up less than 1% of the Chignik Lagoon harvest. Given their access to the strong sockeye salmon run returning to Chignik River, sockeye salmon is both available to and preferred by residents of Chignik Lagoon (Table 6-9; Figure 6-6).

Salmon Harvests by Gear Type

Subsistence salmon permits do not require fishers to record gear type; however, researchers conducting subsistence salmon harvest surveys do ask about gear type. In 2011, 74% of all salmon harvested by Chignik Lagoon residents were harvested with subsistence gear (29% by gillnet and 45% by seine), less than 1% with rod and reel or hook and line (jig), and 26% were removed from commercial catches (Table 6-10; Figure 6-7). In terms of numbers of fish, sockeye salmon, whether harvested when bright or when red, as just prior to or post spawning, were harvested the most with subsistence gear at 89% (34% by gillnet and 55% by seine) and then by removal from commercial catches (12%). Chinook salmon were mostly (91%) removed from commercial catches in 2011, with only 6.6% taken with subsistence gear (seines). In 2011, only 3% of the Chinook salmon harvest was taken using a rod and reel. Fifty-six percent of the coho salmon harvest was removed from commercial catches, and 44% percent was harvested with subsistence gear. Sixty-one percent of pink salmon were harvested with subsistence gear and 39% percent were removed from commercial catches. All the chum salmon harvested by Chignik Lagoon residents were retained from commercial harvests.

Species, Gear, Processing, and Seasons

The sockeye salmon that return to the Chignik River have historically been identified and managed by ADF&G as 2 distinct runs. The first run typically peaks in mid-June and the second run peaks in mid- to late July (Anderson and Nichols 2012). Sockeye salmon are harvested for subsistence as early as late April in Chignik Lagoon and Chignik River and as late as February in Clark River, a tributary of Chignik Lake.

Table 6-9. –Estimated harvests and uses of salmon, Chignik Lagoon, 2011.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount		95% confidence limit (±)	
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	household	Per capita	Total	Unit		
												household
Salmon	95.0	75.0	75.0	65.0	65.0	9,638.8	419.1	158.1	1,777.5	ind	77.3	24.0
Chum salmon	15.0	20.0	10.0	0.0	5.0	6.2	0.3	0.1	1.2	ind	0.1	71.7
Coho salmon	30.0	35.0	30.0	5.0	10.0	305.1	13.3	5.0	60.3	ind	2.6	32.8
Chinook salmon	65.0	55.0	50.0	25.0	15.0	1,500.3	65.2	24.6	173.7	ind	7.6	31.8
Pink salmon	35.0	30.0	20.0	15.0	20.0	272.7	11.9	4.5	117.3	ind	5.1	61.0
Sockeye salmon	95.0	75.0	70.0	55.0	65.0	7,554.5	328.5	123.9	1,425.0	ind	62.0	24.7

Source: ADF&G Division of Subsistence household surveys, 2012.

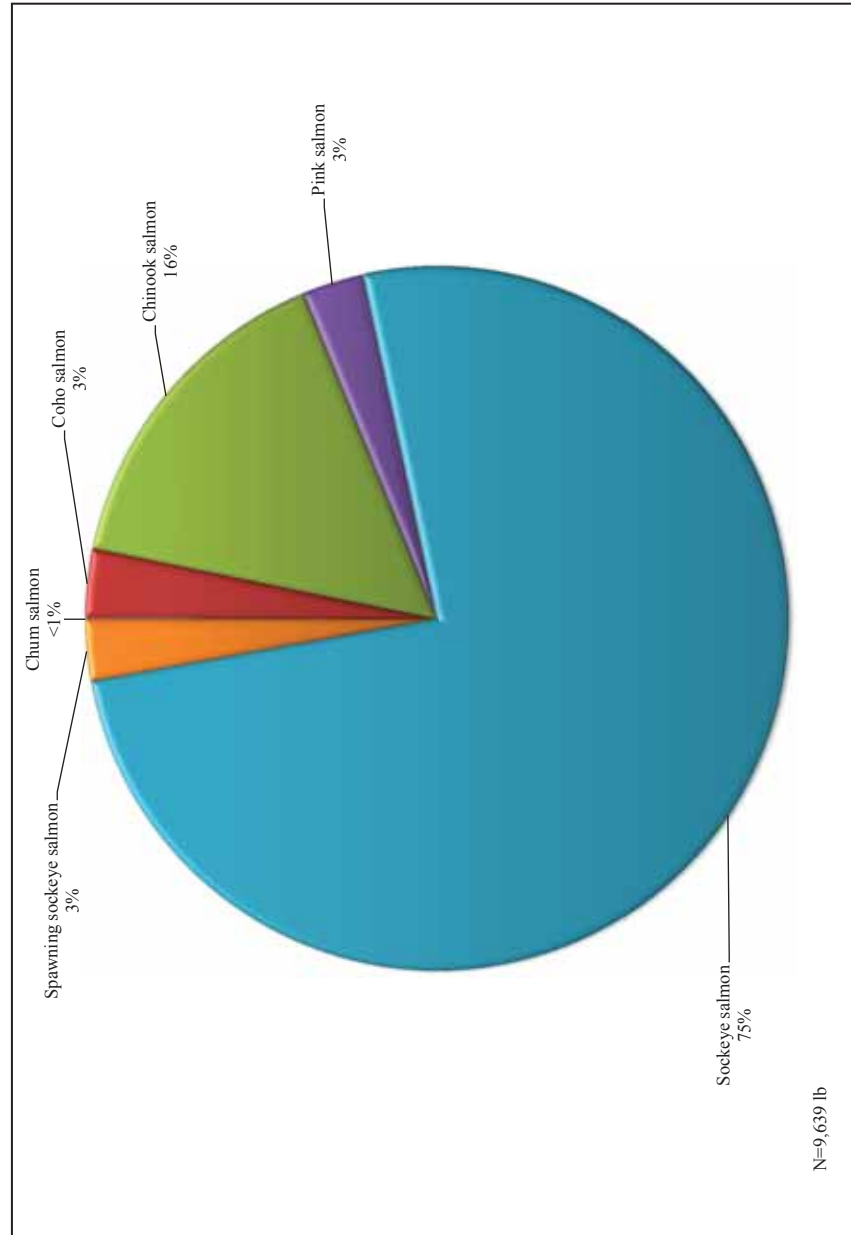


Figure 6-6. –Estimated pounds of salmon harvested, Chignik Lagoon, 2011.

Table 6-10.—Estimated percentages of salmon harvested by gear type and resource, Chignik Lagoon, 2011.

Resource	Percentage base	Removed from commercial catch		Subsistence methods										Subsistence gear, any method		Rod and reel		Jig		Any method	
		Number		Subsistence gillnet		Seine		Number		Pounds		Number		Pounds		Number		Pounds		Number	
		Percentage	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	Gear type		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Resource	22.6%	26.1%	31.4%	28.5%	45.7%	45.1%	77.1%	73.5%	77.1%	73.5%	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	22.6%	26.1%	31.4%	28.5%	45.7%	45.1%	77.1%	73.5%	77.1%	73.5%	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Chum salmon	Gear type		0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Coho salmon	Gear type		8.4%	6.8%	1.0%	1.1%	2.5%	2.4%	1.9%	1.9%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	3.2%
	Resource	56.2%	56.2%	9.5%	9.5%	34.3%	34.3%	43.8%	43.8%	43.8%	43.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	1.9%	1.8%	0.3%	0.3%	1.2%	1.1%	1.5%	1.4%	1.4%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	3.2%
Chinook salmon	Gear type		39.2%	54.2%	0.0%	0.0%	2.3%	0.8%	0.8%	0.8%	1.4%	100.0%	100.0%	2.6%	2.6%	0.0%	0.0%	0.0%	0.0%	9.8%	15.6%
	Resource	90.7%	90.7%	0.0%	0.0%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	8.9%	14.1%	0.0%	0.0%	0.6%	1.0%	0.6%	1.0%	0.6%	1.0%	100.0%	100.0%	2.6%	2.6%	0.0%	0.0%	0.0%	0.0%	9.8%	15.6%
Pink salmon	Gear type		11.4%	4.3%	12.8%	6.0%	0.0%	5.2%	2.3%	5.2%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	2.8%
	Resource	39.2%	39.2%	60.8%	60.8%	0.0%	0.0%	60.8%	60.8%	60.8%	60.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	2.6%	1.1%	4.0%	1.7%	0.0%	0.0%	4.0%	1.7%	4.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	2.8%
Sockeye salmon	Gear type		40.6%	34.5%	86.2%	92.9%	96.0%	95.3%	92.0%	94.4%	94.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.2%	78.4%
	Resource	11.5%	11.5%	33.7%	33.7%	54.8%	54.8%	88.5%	88.5%	88.5%	88.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	9.2%	9.0%	27.0%	26.4%	43.9%	42.9%	71.0%	69.4%	69.4%	69.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.2%	78.4%

Source ADF&G Division of Subsistence household survey, 2012.

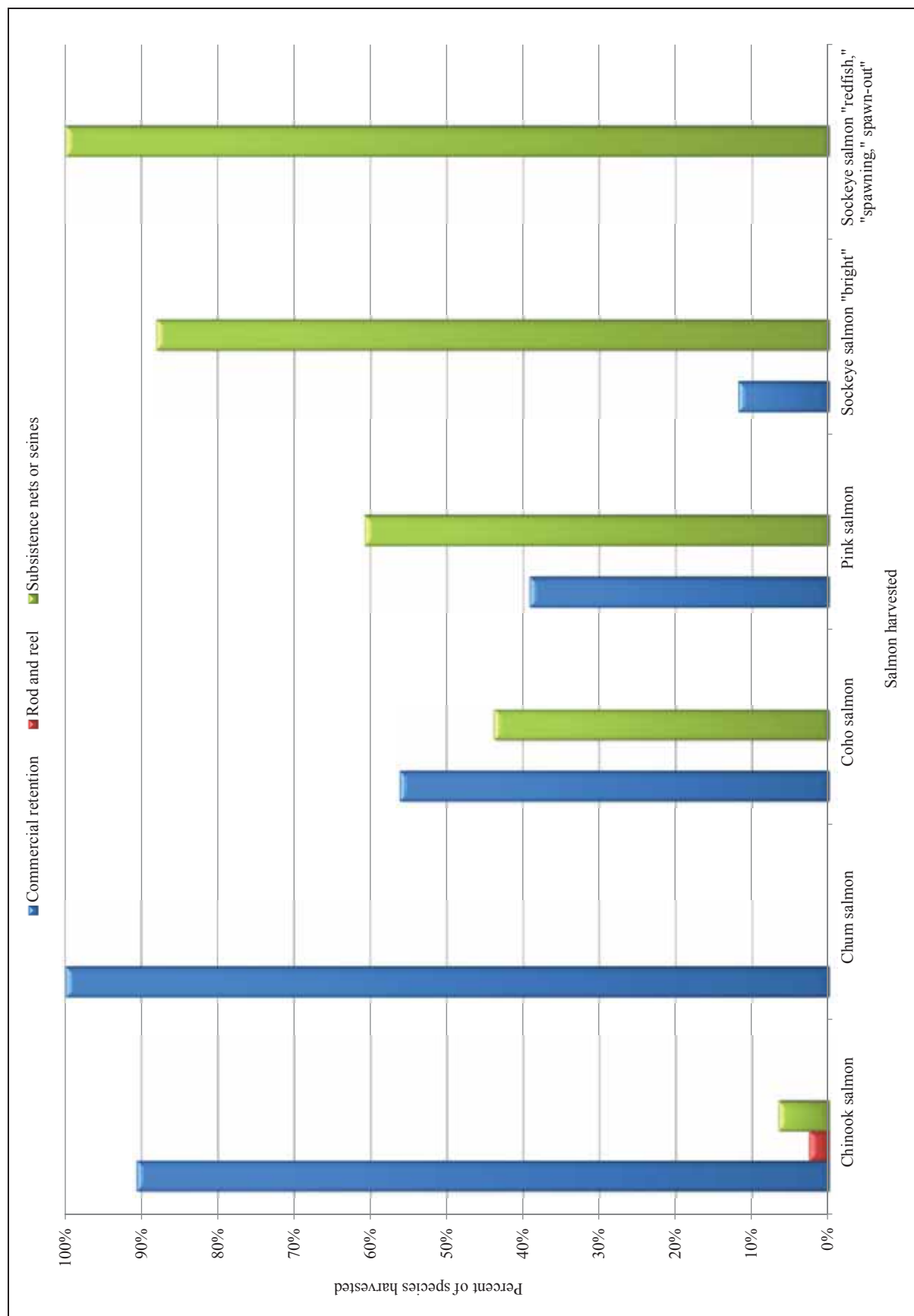


Figure 6-7.—Estimated percentage of salmon harvests by species and gear type for subsistence home use, Chignik Lagoon, 2011.

Most Chignik Lagoon residents prefer to harvest their early-run sockeye salmon during late May to early June prior to the first CMA commercial salmon opening. Sockeye salmon for subsistence from the first run are harvested for subsistence use by Chignik Lagoon residents in various locations in Chignik Lagoon using commercial purse seine gear, a legal gear allowed for subsistence, prior to the commercial opening. Harvests continue throughout the summer in these locations and occasionally in Chignik Lake with subsistence gear.

Starting in early July, late-run sockeye salmon are harvested in Chignik Lagoon or Chignik River using subsistence gillnets. Chignik Lagoon residents also travel to Clark River in October or November to harvest “redfish” [sockeye salmon that are in fresh water, with red skin and light pink flesh, and that are preparing to spawn (spawning-sockeye salmon) or that have already spawned (spawn-out sockeye salmon)].

Chinook salmon are preferred by many Chignik Lagoon residents. The majority of Chignik Lagoon residents acquire their Chinook salmon from commercial harvests as “home pack” (fish caught commercially, but not sold and kept for home use). This is legal for commercial salmon fishermen in the CMA but the amount of fish kept must be recorded on a commercial ADF&G fish tickets (not subsistence permit) at the time of landing (5 AAC 15.355). Commercial salmon fishermen are also authorized by regulation to subsistence fish (instead of commercial fish) at any time with the exception of during the 12 hours prior and 12 hours following a commercial opening. Salmon taken for subsistence by commercial boats must be recorded on subsistence permits (5AAC01.485). Commercial fishers generally prefer not to sell Chinook salmon that are caught by their purse seine because they are more valuable to them as a food item than the price paid by the processors. Chignik Lagoon residents also use rod and reel to harvest Chinook salmon both upriver and downriver of the ADF&G weir, authorized by federal subsistence regulations. Traditionally, Chignik Lagoon residents harvest Chinook salmon in the upper parts of Chignik River with rod and reel; however, residents commented that they have to fish in the lower parts of the river more because of sport anglers in the upper sections.

Chignik Lagoon Subsistence Needs Assessment

The majority of households in Chignik Lagoon (60%) said they used less salmon in 2011 than in recent years (Table 6-11). Twenty percent of all households said they used the same amount of salmon as in recent years and 20% said they used more. Respondents who said they used less salmon attributed the change to not having enough time (33%), regulations (25%), resource availability (17%), and less need (17%) (Table 6-12). Respondents who said their 2011 use was more than in recent years attributed the change to increased availability of resources (25%), increased effort (25%), and “other reasons” (50%) (Table 6-13).

Respondents were also asked if they harvested and/or received enough salmon in 2011 to meet their subsistence needs (Table 6-14). Negative responses prompted researchers to ask respondents what the level of impact was of not getting enough salmon on their household (Table 6-14). In Chignik Lagoon, 9 households (45%) said they did not get enough salmon to meet their needs in 2011, and the majority of these households said the impact was minor. One household in Chignik Lagoon did report that the impact of not getting enough salmon was severe. One-half of the households in Chignik Lagoon who said they did not get enough salmon in 2011 said they compensated by eating other subsistence foods, 38% said they were consuming more commercially processed foods and the others said they cut meals or asked others for help (Table 6-8).

Current and Historical Harvest Areas

In 1984 and 1985, Division of Subsistence researchers mapped community subsistence salmon fishing areas with representatives of the community of Chignik Lagoon (ADF&G 1985; Morris 1987; Fall et al. 1995). The areas marked on the map in Figure 6-8 were identified by local respondents as areas that had been used regularly during the 20-year period from the mid-1960s into the 1980s (Fall et al. 1995; Hutchinson-Scarborough et al. 1996). Figure 6-8 shows that the entirety of Chignik Lake and Chignik Lagoon were being used by Chignik Lagoon residents from the 1960s through the 1980s.

Table 6-11.—Changes in household uses of resources compared to recent years, Chignik Lagoon, 2011.

Resource category	Sampled households	Valid responses ^a	Households reporting use					
			Less		Same		More	
			Number	Percentage	Number	Percentage	Number	Percentage

Salmon 20 20 8.3% 2 12 60% 4 20% 4 20%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-12.—Reasons for less household uses of resources compared to recent years, Chignik Lagoon, 2011.

Resource category	Valid responses ^a	Households reporting reasons for less use																		
		Family/personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/environment				
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage			
Salmon	20	12	1	8.3%	2	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	8.3%	0	0.0%	1	8.3%
-continued-																				

Salmon 20 12 8.3% 1 8.3% 2 16.7% 0 0.0% 0 0.0% 0 0.0% 0 0.0% 1 8.3% 0 0.0% 1 8.3%

-continued-

Table 23.—Continued.

Households reporting reasons for less use																	
Resource category	Valid responses ^a	Working/no time		Regulations		Small/diseased animals		Did not get enough		Did not need		Equipment/fuel expense		Used other resources		Other reasons	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	20	12	33.3%	3	25.0%	1	8.3%	1	8.3%	2	16.7%	1	8.3%	1	8.3%	2	16.7%

Source: ADF&G Division of Subsistence household surveys, 2012.

Salmon 20 12 33.3% 4 33.3% 3 25.0% 0 0.0% 0 0.0% 2 16.7% 0 0.0% 0 0.0% 2 16.7%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-13. –Reasons for more household uses of resources compared to recent years, Chignik Lagoon, 2011.

Resource category	Valid responses ^a		Households reporting reasons for more use		Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	20	4	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%

-continued-

Table 24.–Continued.

Resource category	Valid responses ^a		Households reporting reasons for more use		Regulations		Traveled further		More success		Needed less		Store-bought expense		Got fixed equipment		Other reasons	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	20	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	50.0%

Source ADF&G Division of Subsistence household surveys, 2012.

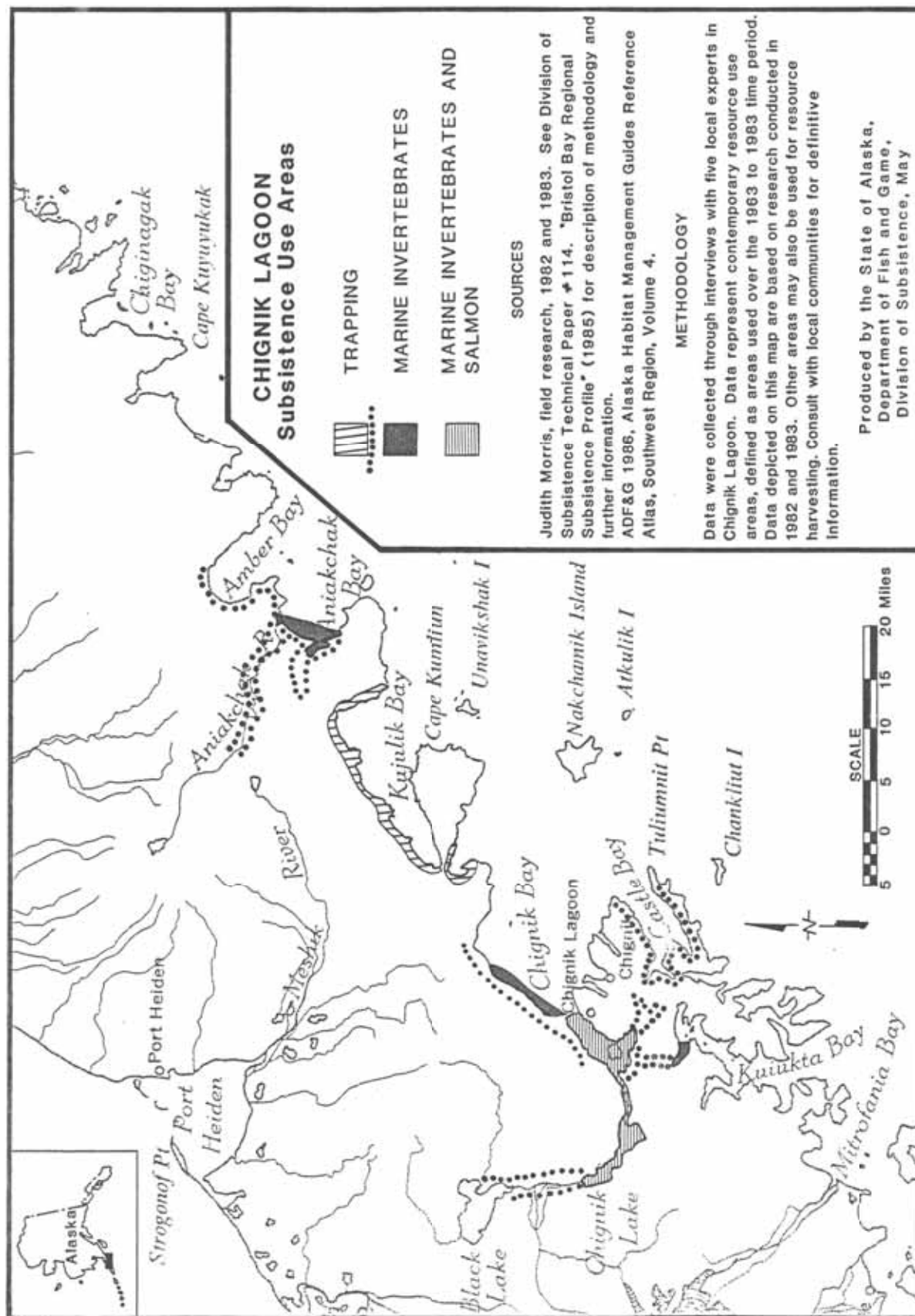
a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-14. –Reported impact to households responding that they did not get enough salmon, Chignik Lagoon, 2011.

Resource	Sampled households	Households getting enough salmon				Impact to those not getting enough salmon									
		Valid responses		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	23	23	100.0%	2	8.7%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2011.

Source ADF&G Division of Subsistence household surveys, 2011.



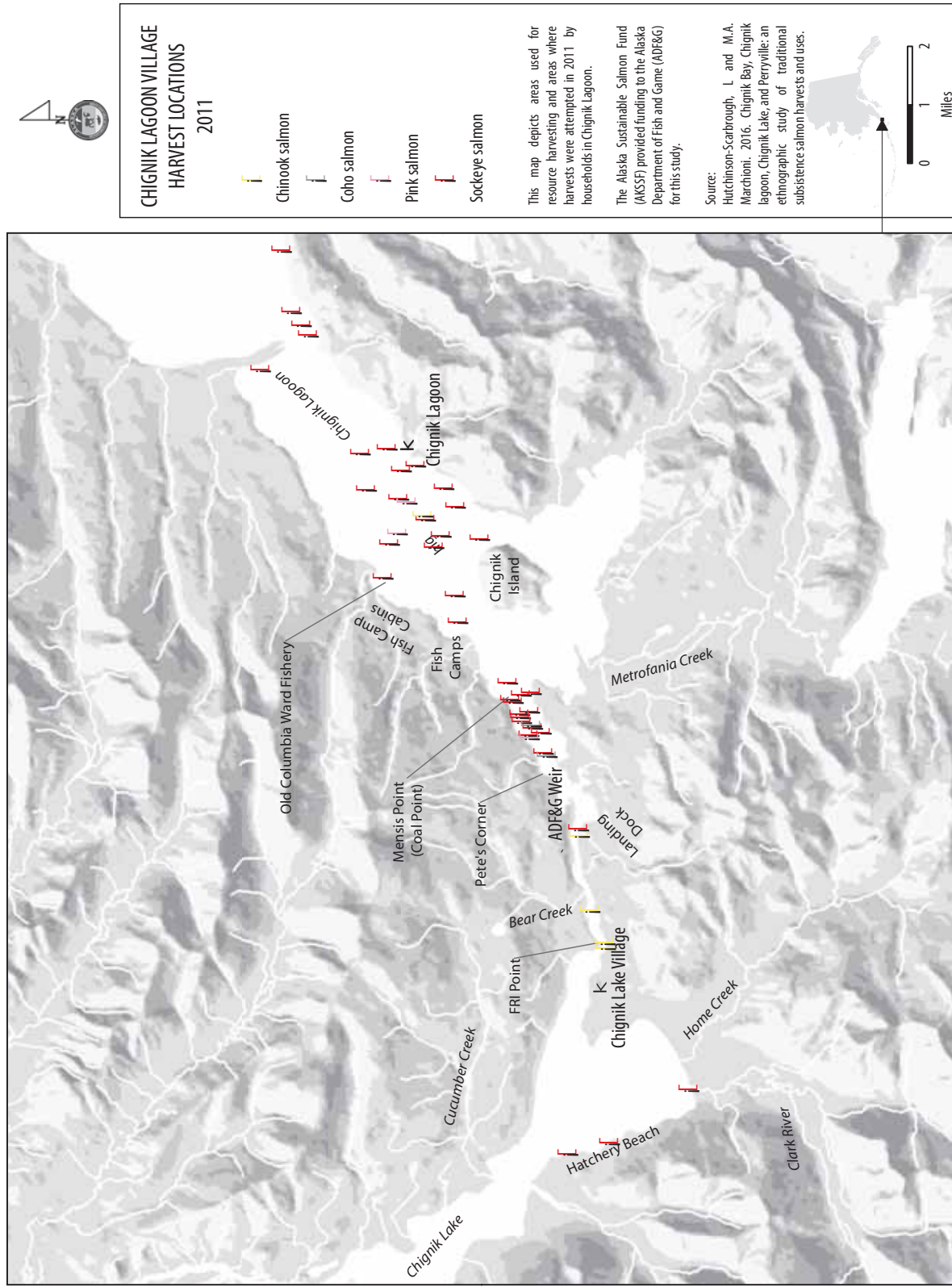


Figure 6-9. –Salmon harvest locations, Chignik Lagoon, 2011.

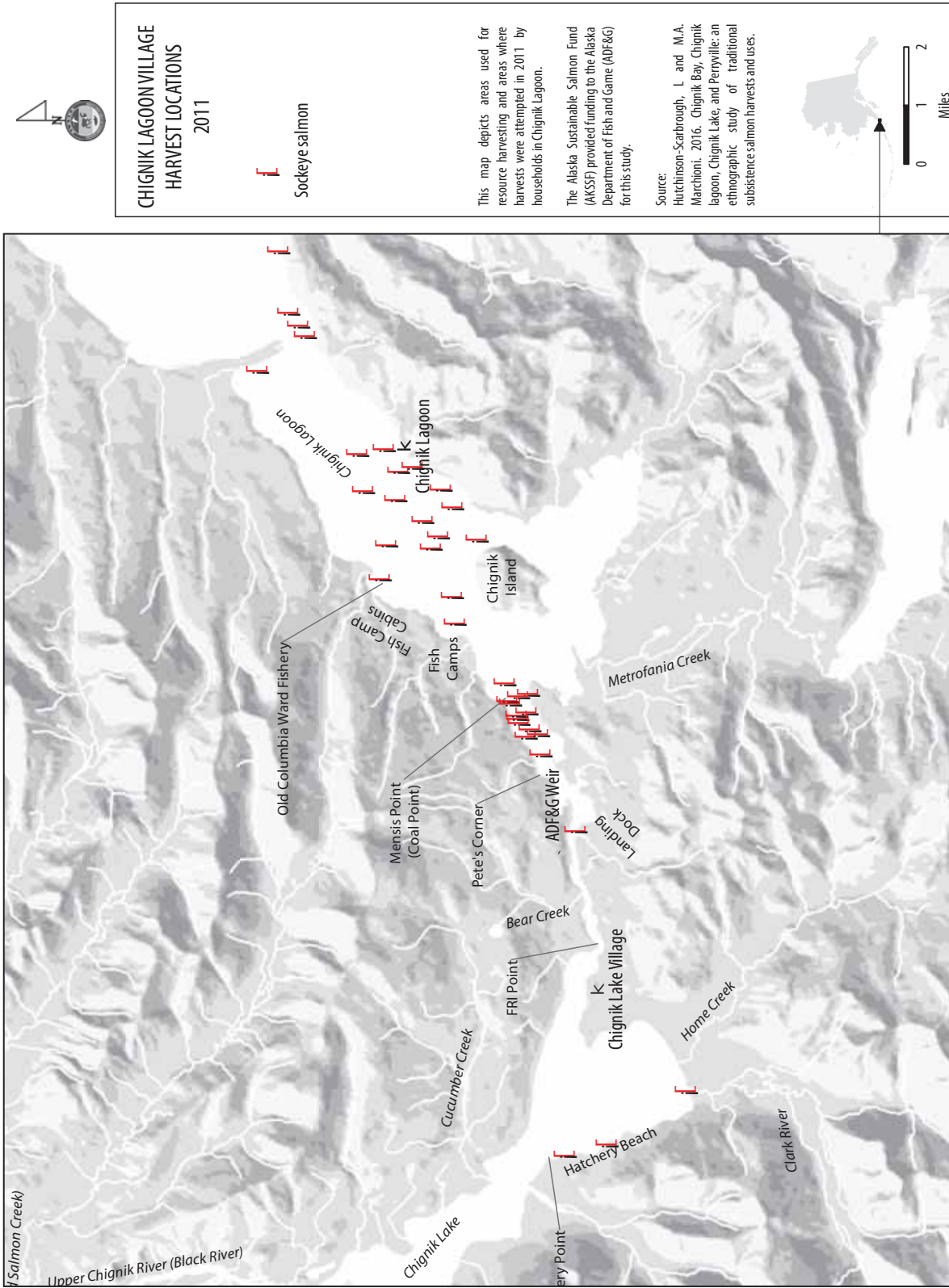


Figure 6-10.—Sockeye salmon harvest by gear type, Chignik Lagoon, 2011.

Households in Chignik Lagoon that harvested salmon in 2011 were asked to map the areas where they fished, as well as species harvested, gear used, and approximate harvest date (figures 6-9 and 6-10). Figure 6-9 indicates the community of Chignik Lagoon's harvest locations of all species in 2011, and Figure 6-10 shows the community of Chignik Lagoon's sockeye salmon harvests by gear type in 2011. See Appendix D for additional harvest area maps by other species of salmon and gear used. Harvest areas remain consistent with the mapping conducted in 2012 representing the 2011 study year.

2011 SUBSISTENCE SALMON HARVEST SURVEY RESULTS: CHIGNIK LAKE

Demographic Data

The 2011 survey data for the community of Chignik Lake showed an estimated 92 residents, of which 90 (99%) identified as being of Alaska Native descent (Table 6-2). Males represented 49% (45) of the total Chignik Lake population while females made up 51% (47). The average age of Chignik Lake residents was 35 years. In 2011, Chignik Lake had an estimated 27 occupied households and an average house size of 3.

Chignik Lake Salmon Harvest, Use, and Sharing Patterns

Estimates of salmon harvest and use by Chignik Lake residents in 2011 are shown in Table 6-15. All salmon species are reported in pounds usable weight and amounts (see Appendix C for conversion factors). The harvest category includes salmon harvested by all households during 2011. The use category includes all salmon harvested, received, given away and/or used by all households. Purchased salmon is not included within the harvest or use categories.

In 2011, 100% of households in Chignik Lake reported using salmon, 86% of households attempted to harvest salmon, 82% harvested, and 86% of households both gave away and received salmon (Table 26). All 5 species of Pacific salmon found in Alaska were used and harvested by Chignik Lake households in 2011. Sockeye salmon was the most used and shared species by Chignik Lake residents in 2011, with 100% of households using, 86% attempting to harvest, 82% harvesting, 82% giving away, and 68% receiving sockeye salmon. Chinook salmon was the second most used and harvested salmon by Chignik Lake residents, with 59% using, 45% attempting to harvest, 32% harvesting, and 41% both receiving and giving away Chinook salmon. Coho salmon was used by 32% of Chignik Lake households, pink salmon was used by 18%, and chum salmon was used by 14%.

Chignik Lake Salmon Harvest Quantities and Species Composition

In 2011, Chignik Lake residents reported a total harvest of 3,367 salmon (17,859 lb) (Table 26). Chignik Lake residents harvested an average of 125 salmon (661 lb) per household and 37 salmon (194 lb) per capita. Sockeye salmon composed 94% (16,793 lb; 3,168 individual fish) of Chignik Lake's total salmon harvest by weight in 2011. "Bright" sockeye salmon made up 89% of the overall harvest (15,902 lb; 3,000 individual fish), and spawning sockeye salmon composed 5% (891 lb; 168 individual fish). Coho salmon was Chignik Lake's second most harvested salmon species making up 3% (583 lb; 115 individual fish), followed by Chinook salmon 2% (371 lb; 43 individual fish). Pink and chum salmon each represented less than 1% of the Chignik Lake harvest. Chignik Lake residents prefer sockeye salmon, and they have easy access to a strong sockeye salmon run, making sockeye salmon their highest harvested species (Table 6-15; Figure 6-11).

Salmon Harvests by Gear Type

Subsistence salmon permits do not require fishers to record gear type; however, researchers conducting subsistence salmon harvest surveys do ask about gear type. In 2011, 94% of all salmon harvested by Chignik Lake residents were harvested with subsistence gear (67% by gillnet and 27% by seine), less

Table 6-15. –Estimated harvest and uses of salmon, Chingik Lake, Alaska, 2011.

Resource	Percentage of households						Harvest weight (lb)			Harvest amount		95% confidence limit (±)
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean household	Per capita	Total	Unit	Mean household	
Salmon	100.0	86.4	81.8	86.4	86.4	17,858.6	661.4	194.0	3,366.4 ind	124.7	21.6	
Chum salmon	13.6	13.6	13.6	0.0	9.1	31.3	1.2	0.3	6.1 ind	0.2	51.4	
Coho salmon	31.8	31.8	31.8	4.5	18.2	583.2	21.6	6.3	115.4 ind	4.3	39.7	
Chinook salmon	59.1	45.5	31.8	40.9	40.9	371.1	13.7	4.0	43.0 ind	1.6	39.8	
Pink salmon	18.2	18.2	18.2	9.1	9.1	79.9	3.0	0.9	34.4 ind	1.3	47.0	
Sockeye salmon	100.0	86.4	81.8	68.2	81.8	16,793.0	622.0	182.4	3,167.6 ind	117.3	22.0	

Source ADF&G Division of Subsistence household surveys, 2012.

Source: ADF&G Division of Subsistence household surveys, 2012.

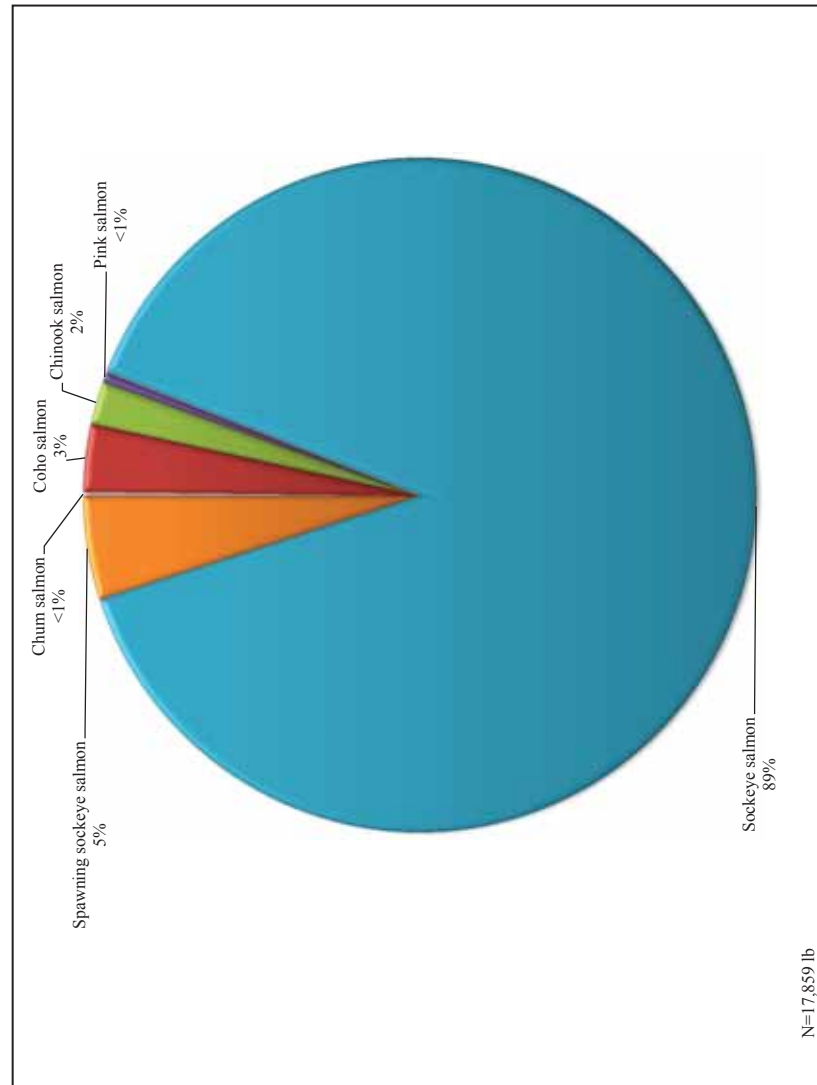


Figure 6-11. –Estimated pounds of salmon harvested by community of Chignik Lake, 2011.

than 3% by rod and reel or hook and line (jig), and 3% by removal from commercial catches (Table 6-16; Figure 6-12). Ninety-six percent of the sockeye salmon were harvested with subsistence gear (69% by gillnet and 27% by seine), 2% with jig or rod and reel, and less than 2% was removed from commercial catches. Chinook salmon were mostly (69%) removed from commercial catches in 2011; however, 6% were taken with subsistence gear (gillnets), and 26% were taken with rod and reel. Coho salmon were harvested with subsistence gear (88%) and rod and reel (12%). Some pink salmon were harvested using subsistence gear (18%), but most (64%) were retained from commercial catches. Chum salmon were harvested with subsistence gear (60%) or removed from commercial catches (40%).

Species, Gear, Processing, and Seasons

The sockeye salmon that return to the Chignik River have historically been identified and managed by ADF&G as 2 distinct runs. The first run peaks in mid-June and the second run peaks in mid- to late July (Anderson and Nichols; 2012). Sockeye salmon are harvested for subsistence as early as late April in Chignik Lagoon and Chignik River and as late as February in Clark River, a tributary of Chignik Lake (Figure 1-3).

Chignik Lake residents begin harvesting early-run sockeye salmon in late April and early May using gillnets set off the beach near the village or on beach locations along the lake. Most residents prefer to put up their early-run sockeye salmon during late May to early June prior to the first CMA commercial salmon opening. Harvesting continues throughout the summer at the locations described above, and occasionally in Black Lake and Chignik Lake tributaries (Figure 1-3) by Chignik Lake residents who have Alaska Native land allotments upriver of the community and are authorized to fish in Black Lake and tributaries which are traditional fishing areas for this community under federal subsistence regulations.

Chignik Lake residents obtain most of their Chinook salmon from commercial catches as home pack from late June through early July (Figure 6-12). A few Chinook salmon are caught in subsistence gillnets in Chignik Lagoon or Chignik River in July. Several subsistence users in Chignik Lagoon and Chignik Lake noted that it is impractical to use legal subsistence gillnets to harvest Chinook salmon because the mesh is too small. Residents explained that if a larger sized mesh were allowed to target Chinook salmon, it would be difficult to limit the harvest. Chignik Lake residents sometimes use rod and reel to fish for Chinook salmon upstream and downstream of the ADF&G Chignik River weir. Fishing for Chinook salmon has traditionally occurred in the upper parts of the river. According to residents of Chignik Lake and Chignik Lagoon, more community members are now fishing in the lower parts of the river because of increasing numbers of sport anglers in the upper river.

Chignik Lake residents use gillnets to target sockeye salmon throughout the year, and in July they also use gillnets to target pink salmon. Coho salmon are fished by Chignik Lake residents from mid-August through December with gillnets or rod and reel and in the same locations as sockeye salmon. Spawmed-out coho salmon are harvested with hook and line in tributaries of Chignik Lake and Black Lake under federal subsistence regulations. Chum salmon are rarely harvested by Chignik Lake residents and are typically released if they are caught incidentally while fishing for sockeye salmon.

Chignik Lake Subsistence Needs Assessment

The majority of households that responded to a needs assessment question in Chignik Lake (53%) said they used less salmon in 2011 than in recent years (Table 6-17). Thirty-two percent of all households said they used the same amount of salmon as in recent years and 16% said they used more. Respondents who said they used less salmon attributed the change to a lack of effort (22%) and other non-specified reasons (22%), and the remainder said the resources were less available, there was never enough time, lack of equipment, or that regulations or the weather made harvesting too difficult (Table 6-18). Table 6-19 presents reasons why respondents used more or less salmon in 2011 compared to recent years.

Table 6-16. –Estimated percentages of salmon harvested by gear type and resource, Chignik Lake, 2011.

Resource	Percentage base	Removed from commercial catch		Subsistence methods										Subsistence gear, any method				Rod and reel		Jig		Any method	
				Subsistence gillnet		Seine		Subsistence gear, any method															
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds				
Salmon	Gear type	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
	Resource	3.1%	3.3%	67.2%	67.0%	26.8%	26.7%	93.9%	93.7%	93.9%	93.7%	0.9%	1.1%	2.0%	1.9%	2.0%	1.9%	100.0%	100.0%				
	Total	3.1%	3.3%	67.2%	67.0%	26.8%	26.7%	93.9%	93.7%	93.9%	93.7%	0.9%	1.1%	2.0%	1.9%	2.0%	1.9%	100.0%	100.0%				
Chum salmon	Gear type	2.3%	2.1%	0.2%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%				
	Resource	40.0%	40.0%	60.0%	60.0%	0.0%	0.0%	60.0%	60.0%	60.0%	60.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%				
	Total	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%				
Coho salmon	Gear type	0.0%	0.0%	2.2%	2.1%	5.9%	5.6%	3.2%	3.1%	3.2%	3.1%	45.8%	36.0%	0.0%	0.0%	0.0%	0.0%	3.4%	3.3%				
	Resource	0.0%	0.0%	42.6%	42.6%	45.7%	45.7%	88.3%	88.3%	88.3%	88.3%	11.7%	11.7%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%				
	Total	0.0%	0.0%	1.5%	1.4%	1.6%	1.5%	3.0%	2.9%	3.0%	2.9%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	3.4%	3.3%				
Chinook salmon	Gear type	27.9%	43.0%	0.1%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	37.5%	50.3%	0.0%	0.0%	0.0%	0.0%	1.3%	2.1%				
	Resource	68.6%	68.6%	5.7%	5.7%	0.0%	0.0%	5.7%	5.7%	5.7%	5.7%	25.7%	25.7%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%				
	Total	0.9%	1.4%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.3%	0.5%	0.0%	0.0%	0.0%	0.0%	1.3%	2.1%				
Pink salmon	Gear type	20.9%	8.7%	0.3%	0.1%	0.0%	0.0%	0.2%	0.1%	0.2%	0.1%	0.0%	0.0%	8.9%	4.1%	0.0%	0.4%	1.0%	0.4%				
	Resource	64.3%	64.3%	17.9%	17.9%	0.0%	0.0%	17.9%	17.9%	17.9%	17.9%	0.0%	0.0%	17.9%	17.9%	0.0%	0.0%	100.0%	100.0%				
	Total	0.7%	0.3%	0.2%	0.1%	0.0%	0.0%	0.2%	0.1%	0.2%	0.1%	0.0%	0.0%	0.2%	0.1%	0.2%	0.1%	1.0%	0.4%				
Sockeye salmon	Gear type	48.8%	46.2%	97.3%	97.5%	94.1%	94.4%	96.4%	96.6%	96.4%	96.6%	16.7%	13.7%	91.1%	95.9%	91.1%	94.1%	94.0%	94.0%				
	Resource	1.6%	1.6%	69.4%	69.4%	26.8%	26.8%	96.2%	96.2%	96.2%	96.2%	0.2%	0.2%	2.0%	2.0%	2.0%	100.0%	100.0%	100.0%				
	Total	1.5%	1.5%	65.3%	65.3%	25.2%	25.2%	90.6%	90.5%	90.6%	90.5%	0.1%	0.1%	1.9%	1.9%	1.9%	94.1%	94.1%	94.0%				

Source ADF&G Division of Subsistence household survey, 2012.

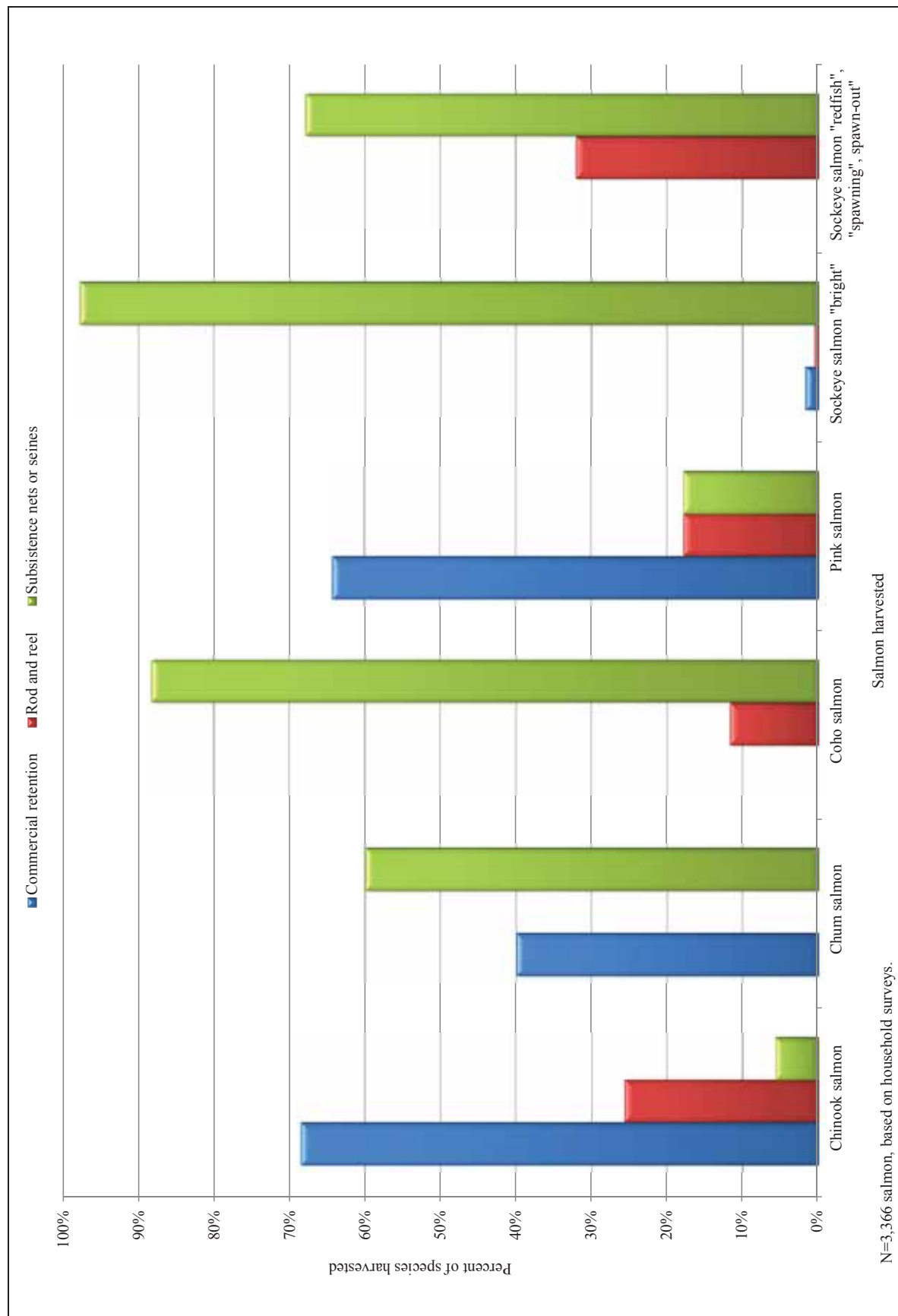


Figure 6-12.—Estimated percentage of salmon harvests by species and gear type, Chignik Lake, 2011.

Respondents were also asked if they harvested and/or received enough salmon in 2011 to meet their subsistence needs (Table 6-20). Negative responses prompted researchers to ask respondents what the level of impact was of not getting enough salmon on their household (Table 6-20). In Chignik Lake, 8 households (38%) said they did not get enough salmon to meet their needs in 2011, and the majority of these households said the impact was minor (63%) (Table 6-20). One household in Chignik Lake did report that the impact of not getting enough salmon was severe. Eighty percent of the Chignik Lake respondents who did not get enough salmon in 2011 said they compensated by eating more commercially processed foods, while others said they used different subsistence foods or asked community members for help (Table 6-8).

Current and Historical Harvest Areas

In 1984 and 1985, Division of Subsistence researchers mapped community subsistence salmon fishing areas with representatives of the community of Chignik Lake (ADF&G 1985; Morris 1987; Fall et al. 1995). The areas marked on the map in Figure 6-13 were identified by local respondents as areas that had been used regularly during the 20-year period from the mid-1960s into the 1980s (Fall et al. 1995; Hutchinson-Scarborough et al. 1996). Figure 32 shows that the entirety of Chignik Lake and Chignik Lagoon were being used by Chignik Lake residents from the 1960s through the 1980s

Households in Chignik Lake that harvested salmon in 2011 were asked to map the areas where they fished, as well as the species they harvested, the gear they used and the approximate harvest dates (figures 6-14 and 6-15). Figure 6-14 indicates the community of Chignik Lake's harvest locations of all species in 2011, and Figure 6-15 shows the community of Chignik Lake's sockeye salmon harvests by gear type in 2011. See Appendix D for additional harvest area maps of locations of harvest of other species of salmon and gear used. Harvest areas remain consistent with the mapping conducted in 2012 representing the 2011 study year.

2011 SUBSISTENCE SALMON HARVEST SURVEY RESULTS: PERRYVILLE

Demographic Data

The community of Perryville had an estimated 101 residents in 2011, of which 98 (98%) identified as being of Alaska Native descent (Table 6-1). Males represented 50% (51) of the total Perryville population and females made up 50% (50). The average age of Perryville residents was 34 years. In 2011, Perryville had an estimated 34 occupied households and an average household size of 3.

Perryville Salmon Harvest, Use, and Sharing Patterns

Salmon harvest and use estimates by Perryville residents in 2011 are described in Table 6-21. All salmon species are reported in pounds usable weight and amounts (see Appendix C for conversion factors). The harvest category includes salmon harvested by all households during 2011. The use category comprises all salmon harvested, received, given away, and used by all households. Purchased salmon is not included within the harvest or use categories.

In 2011, 96% of households in Perryville reported using salmon, 75% of households attempted to harvest salmon, 68% harvested, 61% of households gave away salmon, and 75% received salmon. All 5 species of Pacific salmon in Alaska were used and harvested by Perryville households in 2011. Sockeye salmon was the most used and shared species by Perryville residents in 2011 with 86% of all households using, 68% attempting to harvest, 50% harvesting, 43% giving away, and 57% receiving sockeye salmon. Coho salmon was the second most used and harvested salmon by Perryville residents, with 79% using, 64% attempting to harvest, 50% harvesting, and 46% sharing coho salmon. Pink salmon was used by 64% of Perryville households, Chinook salmon was used by 32%, and chum salmon was also used by 32% (Table 6-21).

Table 6-17.—Changes in household uses of resources compared to recent years, Chignik Lake, 2011.

Resource category	Sampled households	Households reporting use					
		Valid responses ^a		Less		Same	
		Number	Percentage	Number	Percentage	Number	Percentage
Salmon	22	19	52.6%	6	31.6%	3	15.8%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-18.—Reasons for less household uses of resources compared to recent years, Chignik Lake, Alaska, 2011.

Resource category	Valid responses ^a	Households reporting reasons for less use											
		Family/personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	19	9	0.0%	1	11.1%	0	0.0%	1	11.1%	0	0.0%	2	22.2%
-continued-													
		Unsuccessful		Weather/environment									
		Number	Percentage	Number	Percentage								
		0	0.0%	0	0.0%								

Table 29.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for less use											
		Working/no Time		Regulations		Small/diseased animals		Did not get enough		Did not need		Equipment/fuel expense	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	19	9	11.1%	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
-continued-													
		Used other resources		Other reasons									
		Number	Percentage	Number	Percentage								
		0	0.0%	0	0.0%								

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-19.—Reasons for more household uses of resources compared to recent years, Chignik Lake, Alaska, 2011.

Resource category	Valid responses ^a	Households reporting reasons for more use														
		Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help		
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	
Salmon	19	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	66.7%	0	0.0%
-continued-																

-continued-

Table 30.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for more use												
		Regulations		Traveled farther		More success		Needed less		Store-bought Elexpense		Got/fixed equipment		Other reasons
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	
Salmon	19	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-20.—Reported impact to households responding that they did not get enough salmon, Chignik Lake, 2011.

Resource	Sampled households	Households getting enough salmon						Impact to those not getting enough salmon							
		Valid responses		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	22	21	95.5%	8	38.1%	2	25.0%	0	0.0%	5	62.5%	0	0.0%	1	12.5%

Source ADF&G Division of Subsistence household surveys, 2011.

Source ADF&G Division of Subsistence household surveys, 2011.

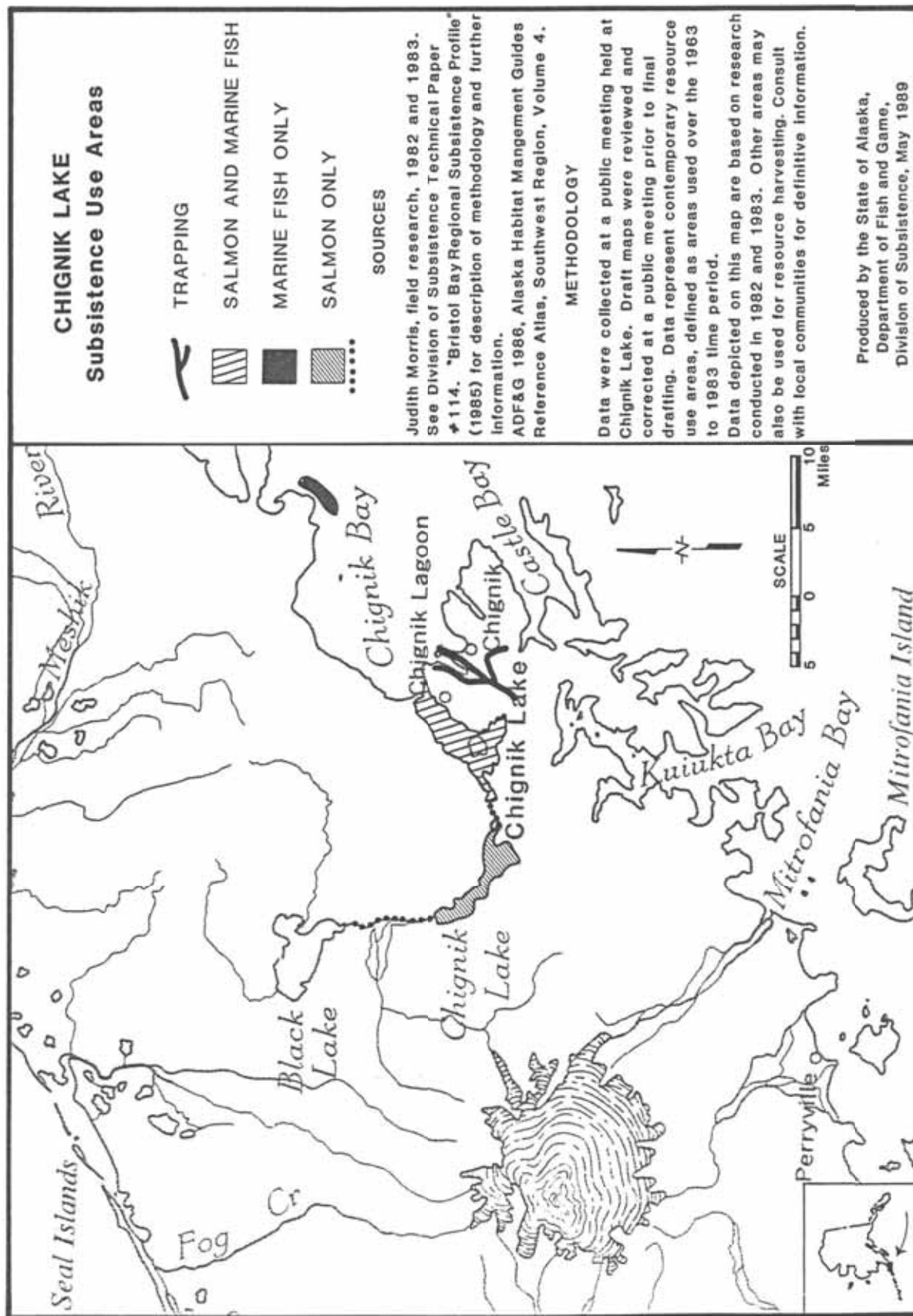


Figure 6-13.—Salmon harvest locations, Chignik Lake, 1985–1986.

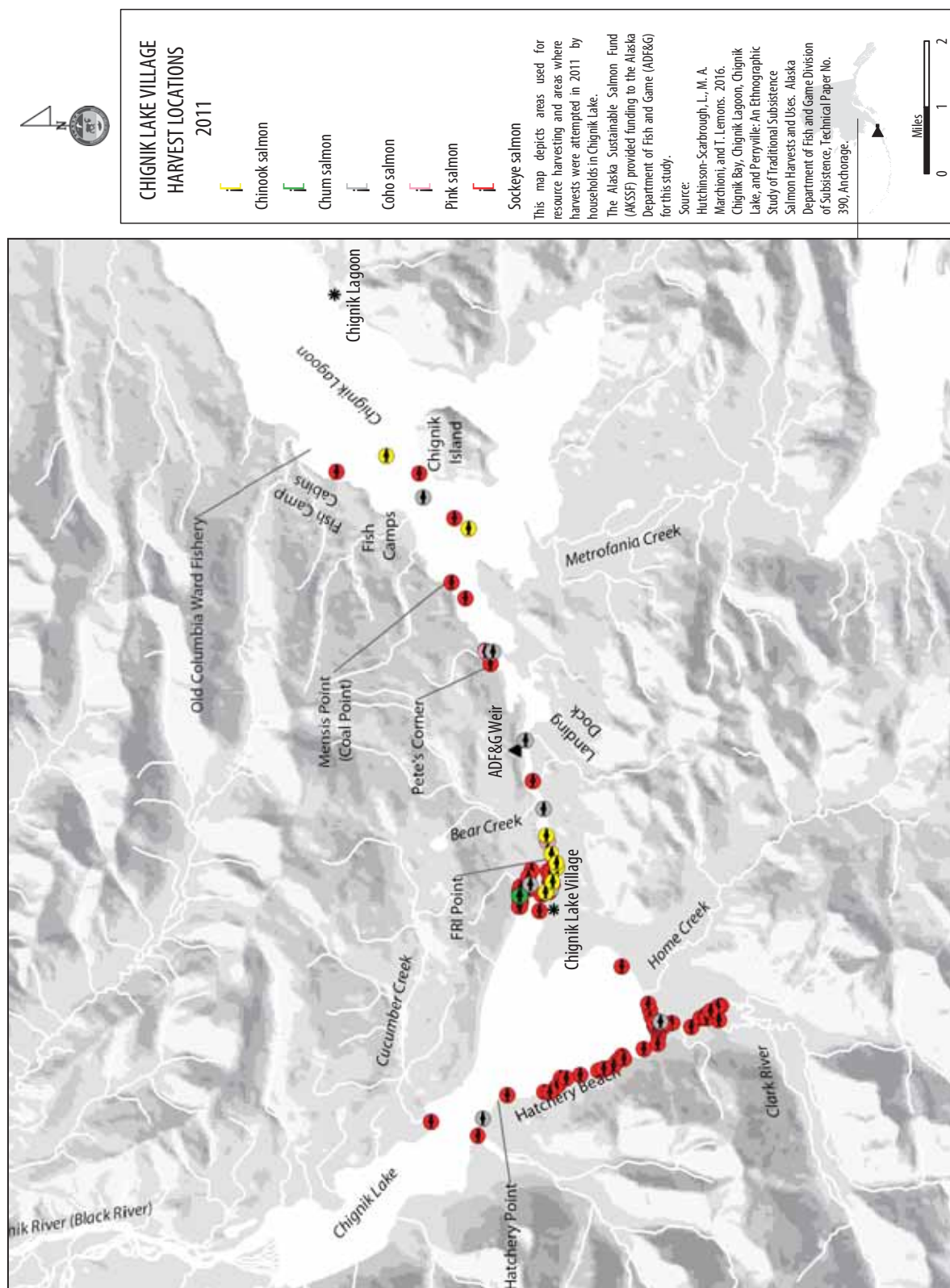


Figure 6-14.—Salmon harvest locations, Chignik Lake, 2011.

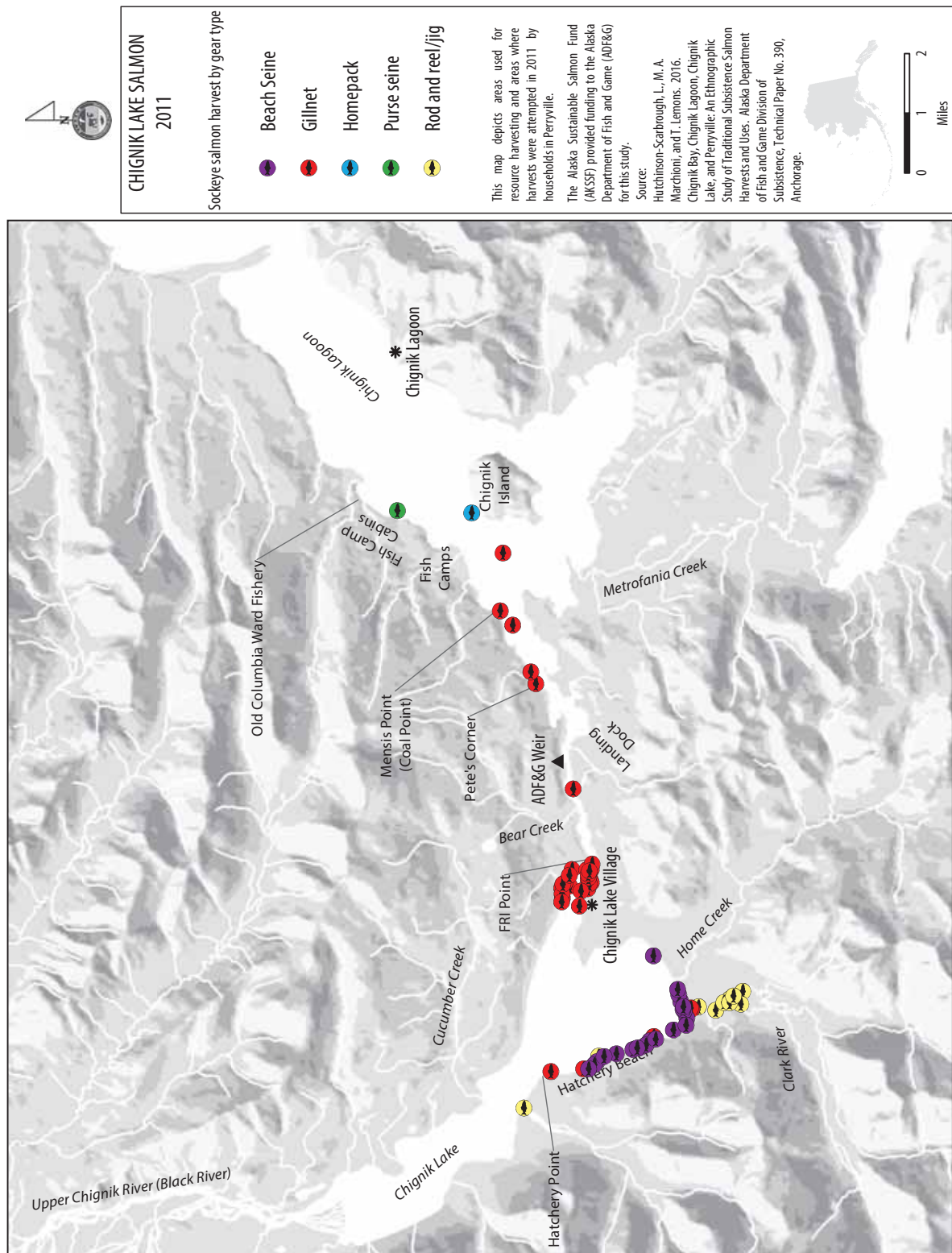


Figure 6-15.—Sockeye salmon harvest by gear type, Chignik Lake, 2011.

Perryville Salmon Harvest Quantities and Species Composition

In 2011, Perryville residents reported a total harvest of 4,868 salmon (23,238 lb) (Table 6-21). Perryville residents harvested an average of 148 salmon (231 lb) per household and 49 salmon (77 lb) per capita. Sockeye salmon composed approximately 62% (14,196 lb; 2,678 individual fish) of Perryville's total salmon harvest by weight in 2011, with 61% of the overall harvest being "bright" sockeye salmon (14,103 lb; 2,660 individual fish) and less than 1% being spawning sockeye salmon (93 lb; 18 individual fish). Perryville residents also harvested coho salmon and pink salmon in both "bright" and spawning phases. Coho salmon was Perryville's second most harvested salmon species making up 21% (4,913 lb; 972 individual fish), with "bright" coho salmon composing 17% of the overall harvest (3,906 lb; 773 individual fish) and spawning coho salmon accounting for 4% of the overall harvest (1,008 lb; 199 individual fish). by Pink salmon followed in ranking at 9% (2,001 lb; 861 individual fish), with 6% of the overall harvest being "bright" pink salmon (1,401 lb; 603 individual fish) and 3% being spawning pink salmon (600 lb; 258 individual fish). Chum salmon represented 6% (1,394 lb; 273 individual fish) of the Perryville harvest by weight, and Chinook salmon 3% (732 lb; 85 individual fish). Perryville residents prefer sockeye and coho salmon. Because their local coho salmon runs have been declining in numbers, they have been acquiring more sockeye from commercial Chignik catches (Table 6-21; Figure 6-16).

Salmon Harvests by Gear Type

Subsistence salmon permits do not require fishers to record gear type—by state regulation, only seine and gillnet are allowed as subsistence gear types in the CMA; however, federal regulations allow for additional gear including rod and reel for local residents in the federal fishery. Researchers conducting subsistence salmon harvest surveys do ask about gear type. In 2011, 89% of all salmon harvested by Perryville residents were harvested with subsistence gear (21% by gillnet and 68% by seine), less than 1% with rod and reel or hook and line (jig), and 10% were removed from commercial catches (Table 6-22; Figure 6-17). Eighty-eight percent of sockeye salmon were harvested with subsistence gear (5% by gillnet and 83% by seine), none were harvested with a jig or rod and reel, and 12% were removed from commercial catches. Chinook salmon were mostly (82%) removed from commercial catches in 2011, 16% were taken with subsistence gear, and 3% were taken with rod and reel. Coho salmon were harvested with subsistence gear (23%) and rod and reel (55%). Pink and chum salmon were harvested with subsistence gear.

Salmon Harvests in the CMA and Harvest Gear Used by Species and Season

The community of Perryville (Figure 1-1) is situated in a bay that has multiple streams hosting runs of coho, chum, and pink salmon. Sockeye and Chinook salmon do not spawn in any streams easily accessible to Perryville residents; however, on occasion these species will be caught on rod and reel under federal subsistence regulations or in a net near the community. There are a few Perryville residents who commercial fish in Chignik Lagoon during the sockeye salmon run, and they will often bring sockeye salmon back as home pack to Perryville. Some families of commercial fishers will stay at fish camps across from the community of Chignik Lagoon and set a gillnet to acquire subsistence sockeye salmon while their other family members are out commercial fishing, and these fish are typically shared throughout the community of Perryville.

Perryville residents obtain Chinook salmon from their commercial harvests, or on a rod and reel under federal subsistence regulations near the community. "White kings," which have white flesh and which are a rare genetic variant of "red" Chinook salmon, are occasionally caught in commercial and subsistence fisheries in the Pacific Ocean waters near the community of Perryville in the summer and occasionally throughout the winter, which lends to them occasionally being referred to as winter kings. Most local subsistence users when asked during the study indicated that they did not eat white kings if caught because they contain a high amount of oil, which is not desirable to the local palate. Local people believe that both red and white kings are usually found in the deeper ocean waters but come closer to shore in the summer months as they migrate to their spawning grounds. There are no Chinook salmon spawning rivers near

Table 6-21.-Estimated harvests and uses of salmon, Perryville, 2011.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount		95% confidence limit (±)
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	
	%	%	%	%	%						
Salmon	96.4	75.0	67.9	75.0	60.7	23,238.2	707.9	230.5	4,868.2 ind		148.3
Chum salmon	32.1	35.7	21.4	21.4	14.3	1,395.5	42.5	13.8	273.2 ind		8.3
Coho salmon	78.6	64.3	50.0	53.6	46.4	4,913.3	149.7	48.7	971.9 ind		29.6
Chinook salmon	32.1	35.7	25.0	21.4	32.1	732.3	22.3	7.3	84.8 ind		2.6
Pink salmon	64.3	57.1	46.4	35.7	28.6	2,000.8	60.9	19.8	860.6 ind		26.2
Sockeye salmon	85.7	67.9	50.0	57.1	42.9	14,196.3	432.5	140.8	2,677.8 ind		81.6

Source: ADF&G Division of Subsistence household surveys, 2012.

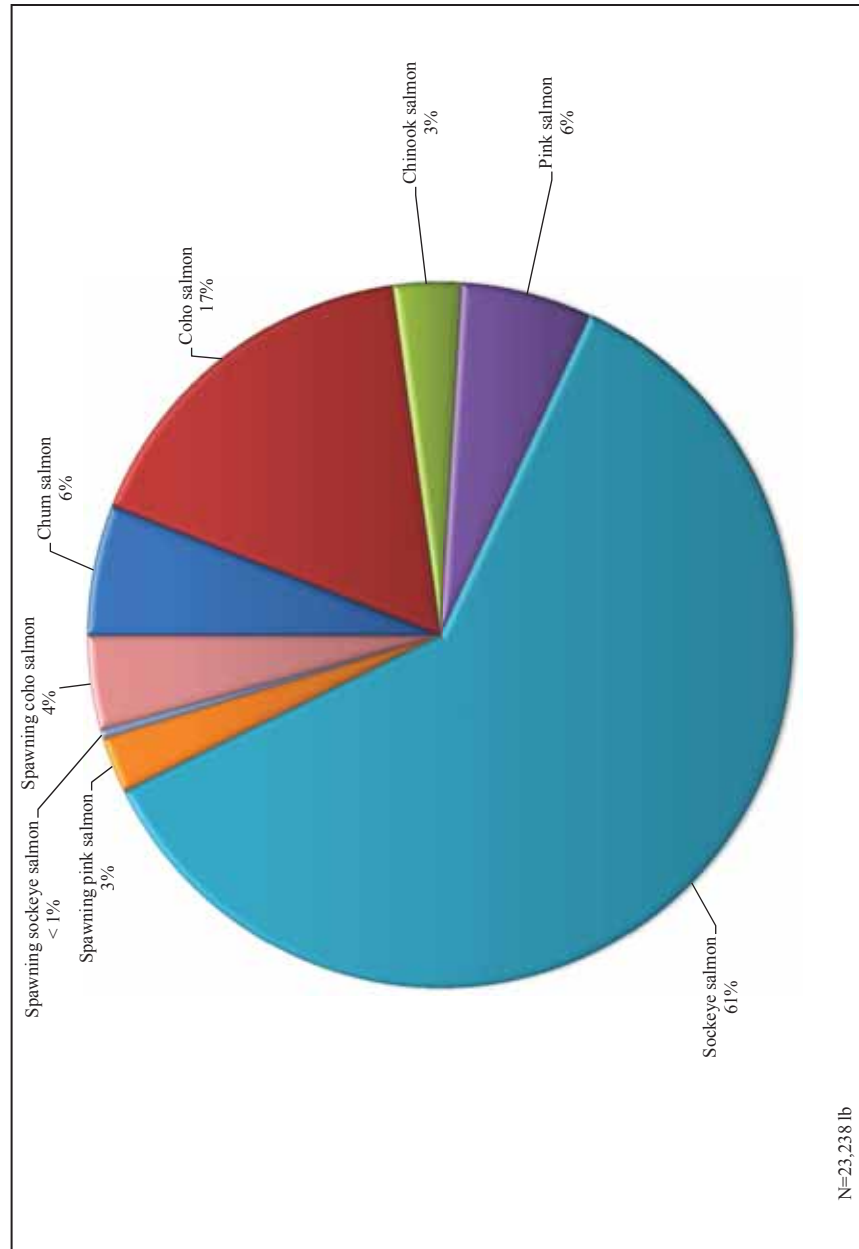


Figure 6-16.-Estimated pounds of salmon harvested by community of Perryville, 2011.

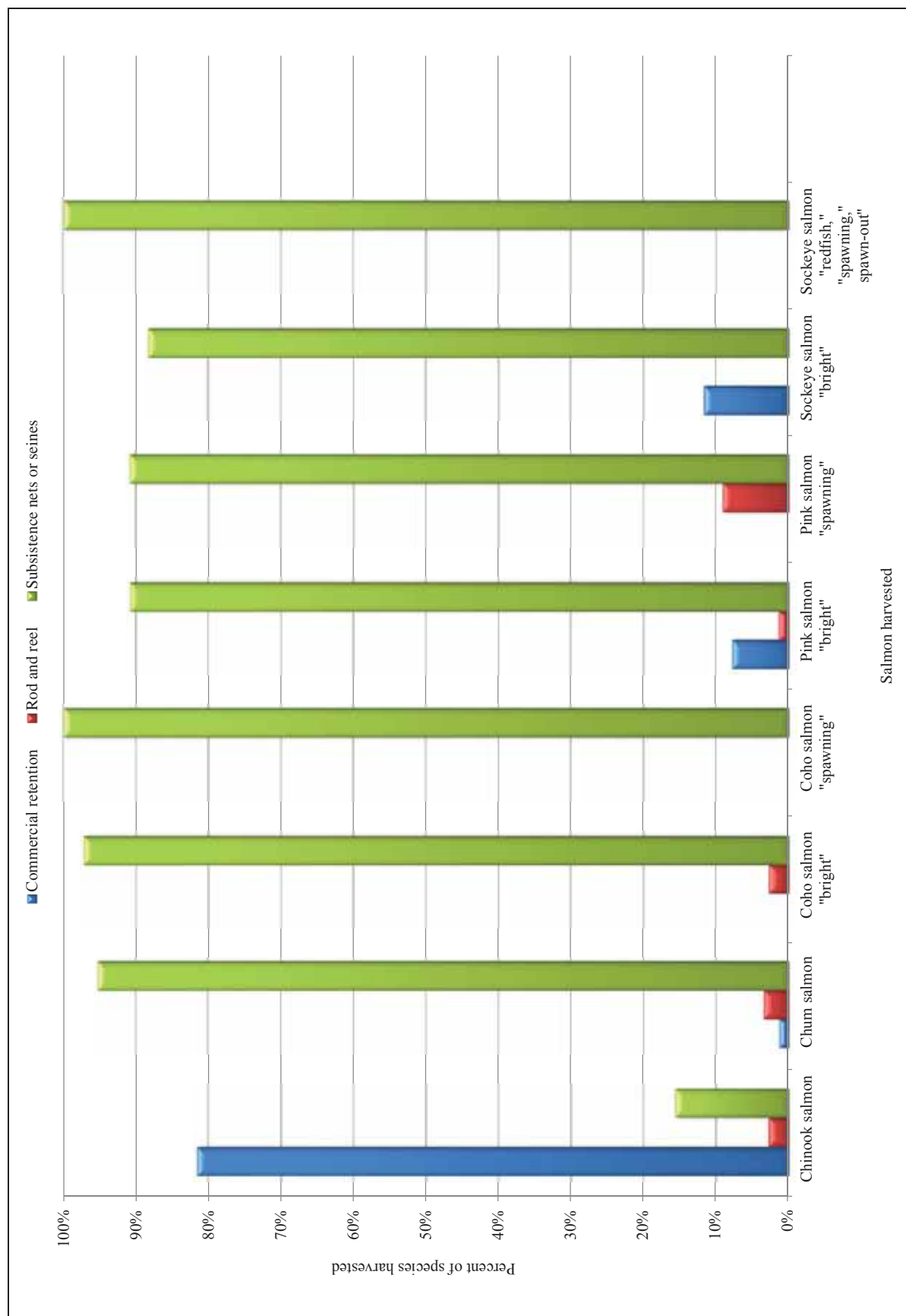


Figure 6-17.—Estimated percentage of salmon harvests by species and gear type, Perryville, 2011.

Perryville: however, the Chignik River is one of the largest spawning rivers in the vicinity. White kings are not known to spawn in the area but are known to spawn in southeast Alaska and British Columbia.¹

From September to November Perryville residents harvest coho, chum, and pink salmon in the streams nearby the community, which are accessed by ATV or foot. Gillnets and rod and reel are used from skiffs to harvest salmon as far west as Ivanof Bay to as far east as Ivan Bay. Nearby salmon rivers are accessed via ATV and are also fished with gillnets and rod and reel. Kametlook River is located only 3 miles east of the community and was once the primary source for residents' coho salmon. However, local residents say that volcanic activity from Mt. Veniaminof has caused excessive glacial melt which has made the Kametlook River uninhabitable for fish. Coho, chum and pink salmon are harvested throughout the summer and fall when available, but the majority of fishing and processing generally occurs in the fall time after commercial salmon fishing for the season is over. These fish are processed in a variety of ways, including drying, smoking, kippering, canning, salting and freezing. Some households that have family relations residing in Chignik Lake will travel to Chignik Lake in late fall/ early winter to harvest "redfish/ "spawn-outs," either at the mouth of Clark River or in Clark River, for processing as dry fish.

Perryville Subsistence Needs

The majority of households that responded to a needs assessment question in Perryville (54%) said they used less salmon in 2011 than in recent years (Table 6-23). Twenty-nine percent of households said they used the same amount of salmon as in recent years and 18% said they used more. Respondents who used less salmon attributed the change to there being less salmon available for them to harvest (28%), or because they did not have time to harvest salmon because of work (21%). Other reasons given included the weather making harvesting difficult, they did not put enough effort into harvesting, or the regulations making harvesting difficult (Table 6-24). Table 6-25 presents reasons why respondents used more salmon in 2011 compared to recent years.

Respondents were also asked if they harvested, or received enough salmon, or both in 2011 to meet their subsistence needs (Table 6-26). Negative responses prompted researchers to ask respondents what the level of impact on their households was of not getting enough salmon (Table 6-26). In Perryville, 13 households (46%) said they did not get enough salmon to meet their needs in 2011, and 6 (46%) of these households said the impact was minor. Four (31%) households in Perryville reported the impact of not getting enough salmon was major and 3 (23%) households said it was severe. Fifty-eight percent of the Perryville respondents who said they did not get enough salmon in 2011 said they compensated by eating more commercially processed foods, while others said they used other subsistence foods or asked community members for help (Table 6-8).

Current and Historical Harvest Areas

In 1984 and 1985, Division of Subsistence researchers mapped community subsistence salmon fishing areas with representatives of the community of Perryville (ADF&G 1985; Morris 1987; Fall et al. 1995). The areas marked on the map were identified by local respondents as areas that had been used regularly during the 20-year period from the mid-1960s into the 1980s (Fall et al. 1995; Hutchinson-Scarborough et al. 1996). Figure 6-18 shows Stepovak Bay, Ivanof Bay, Mitrofanina Bay, Chignik Lake, and Chignik Lagoon, and the streams surrounding Perryville were being used by Perryville residents from the 1960s through the 1980s. No Perryville residents who were interviewed in 2012 reported fishing in Stepovak Bay. The cost of fuel, access to skiffs, and time were all reasons provided for why residents were no longer using Stepovak Bay.

Households in Perryville that harvested salmon in 2011 were asked to map the areas where they fished, as well as which species they harvested, the gear they used and the approximate harvest dates. (figures 6-27–6-30). Figure 6-19 indicates the community of Perryville's harvest locations of all species in 2011, and Figure

1. Davis, Tammy. 2014. White King Salmon: Greenbacks, Gustatory Preference and Genetics. Accessed February 2016. http://www.adfg.alaska.gov/index.cfm?adfg=wildlifeneews.view_article&articles_id=244.

Table 6-23.—Changes in household uses of salmon compared to recent years, Perryville, 2011.

Resource category	Sampled households	Valid responses ^a	Households reporting use					
			Less		Same		More	
			Number	Percentage	Number	Percentage	Number	Percentage
Salmon	29	28	15	53.6%	8	28.6%	5	17.9%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-24.—Reasons for less household uses of salmon compared to recent years, Perryville, 2011.

Resource category	Valid responses ^a	Households reporting reasons for less use															
		Family/personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/environment	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	28	14	7.1%	4	28.6%	0	0.0%	3	2142.9%	0	0.0%	1	7.1%	0	0.0%	1	7.1%

-continued-

Table 35.—Continued.

Table 257. Continued																	
Resource category	Valid responses ^a	Households reporting reasons for less use														Other Reasons	
		Working/no Time		Regulations		Small/diseased animals		Did not get enough		Did not need		Equipment/Fuel Expense		Used other Resources			
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	28	14	21.4%	1	7.1%	0	0.0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%	2	14.3%
Source ADF&G Division of Subsistence household surveys, 2012.																	

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-25.—Reasons for more household uses of salmon compared to recent years, Perryville, 2011.

Resource category	Valid responses ^a	Households reporting reasons for more use									
		Increased availability	Used other resources	Favorable weather	Received more	Needed more	Increased effort	Had more help			
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	28	5	40.0%	0	0.0%	2	40.0%	0	0.0%	1	20.0%

-continued-

Table 36.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for more use									
		Regulations	Traveled farther	More success	Needed less	Store-bought expense	Got/fixed equipment	Other reasons			
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	28	5	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 6-26.—Reported impact to households responding that they did not get enough salmon, Perryville, 2011.

Resource	Sampled households	Households getting enough salmon				Impact to those not getting enough salmon					
		Valid responses	Did not get enough	No response	Not noticeable	Minor	Major	Severe			
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	29	28	96.6%	13	46.4%	0	0.0%	6	46.2%	4	30.8%
										3	23.1%

Source ADF&G Division of Subsistence household surveys, 2011

6-20 shows the community of Perryville's sockeye salmon harvests by gear type in 2011. See Appendix D for additional harvest area maps depicting the harvest of other species of salmon and gear used.

ALL COMMUNITIES' SALMON HARVEST LOCATIONS BY GEAR TYPE

2011 Beach Seine

Beach seines are primarily used to harvest bright sockeye salmon at the end of the commercial fishing season during the late run. They are effective gear for gathering many fish when they are needed the most in preparation for the winter months. Beach seines were used in Perryville by 1 family at the mouth of a stream by Humpback Bay (Figure 6-21).

2011 Gillnet

Gillnets are primarily used on the shore across from the community of Chignik Lake and on the shore directly in front of the community (Figure 6-22). At these locations Chignik Lake residents will set their nets by tying one end to the shore and bringing the other end out with a skiff. Individuals from the bay and lagoon tend to use both the mouth of the river, and the river above the weir because it involves traveling the shortest distance. At the mouth of the river individuals will drift their nets because the water moves fast as it enters the mouth. Gillnets are set on beaches by Perryville residents to harvest chum, coho, and pink salmon at the mouths of spawning streams along the coastline in front of Perryville and Anchor, Ivan, Humpback, and Ivanof bays.

2011 Home pack and/or Purse Seine

Most individuals who commercial fish live in the communities of Chignik Lagoon and Chignik Bay, therefore the locations where people obtain their home pack are close to the shores of these 2 communities (figures 6-23 and 6-24).

2011 Rod and Reel/Jig

Harvesters targeting Chinook salmon by Fry Point in the Chignik River primarily use rod and reel (Figure 6-25). Jigging is done at Clark River (by Hatchery Beach) and is done with the intent of harvesting spawned-out sockeye salmon. Perryville residents use rod and reel to harvest coho and Chinook salmon from the beach in front of Perryville and in Humpback Bay. Though rod and reel is not authorized for subsistence use in the CMA by state regulations, it is authorized for local residents under federal regulations.

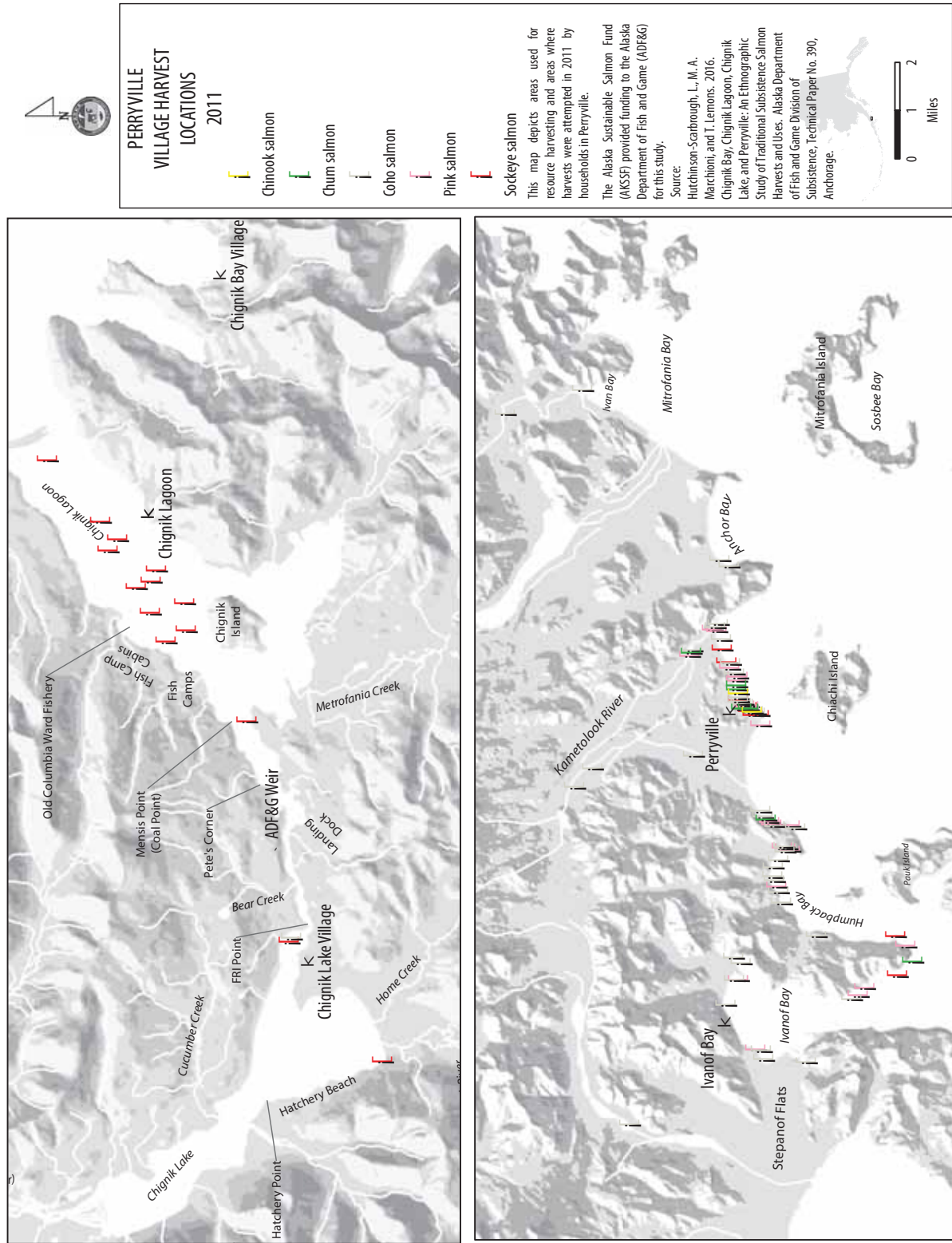
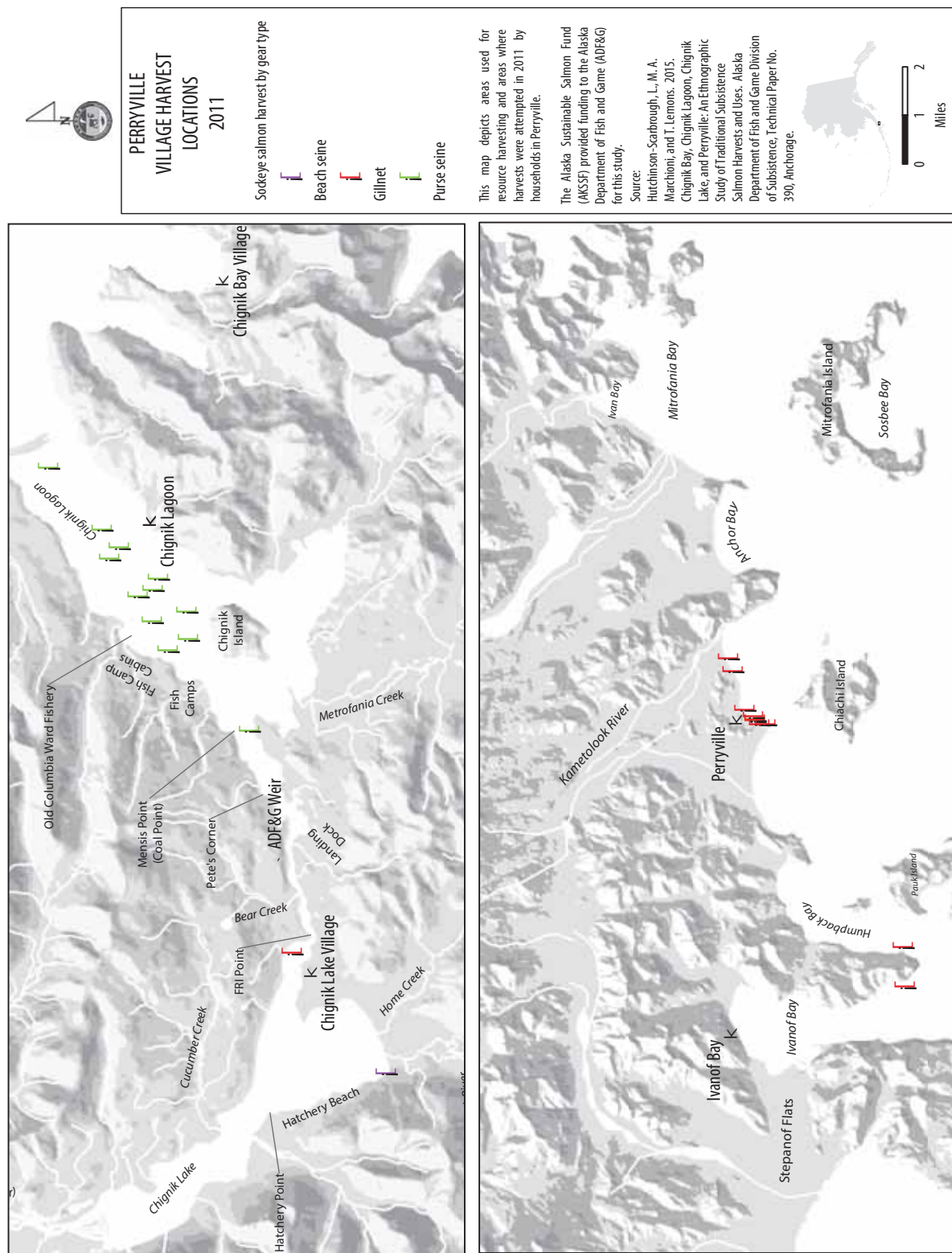
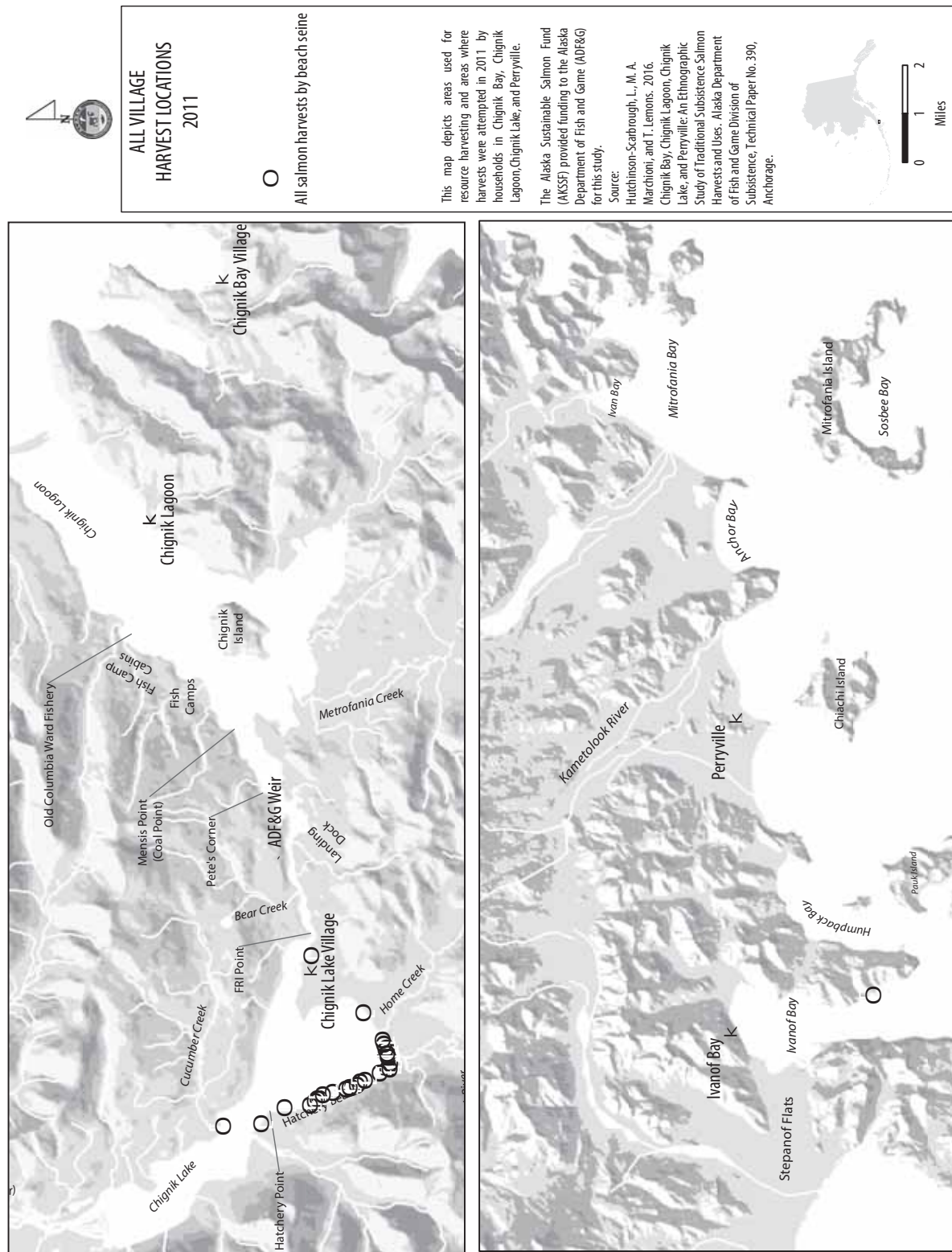


Figure 6-19.—Salmon harvest locations, Perryville, 2011.





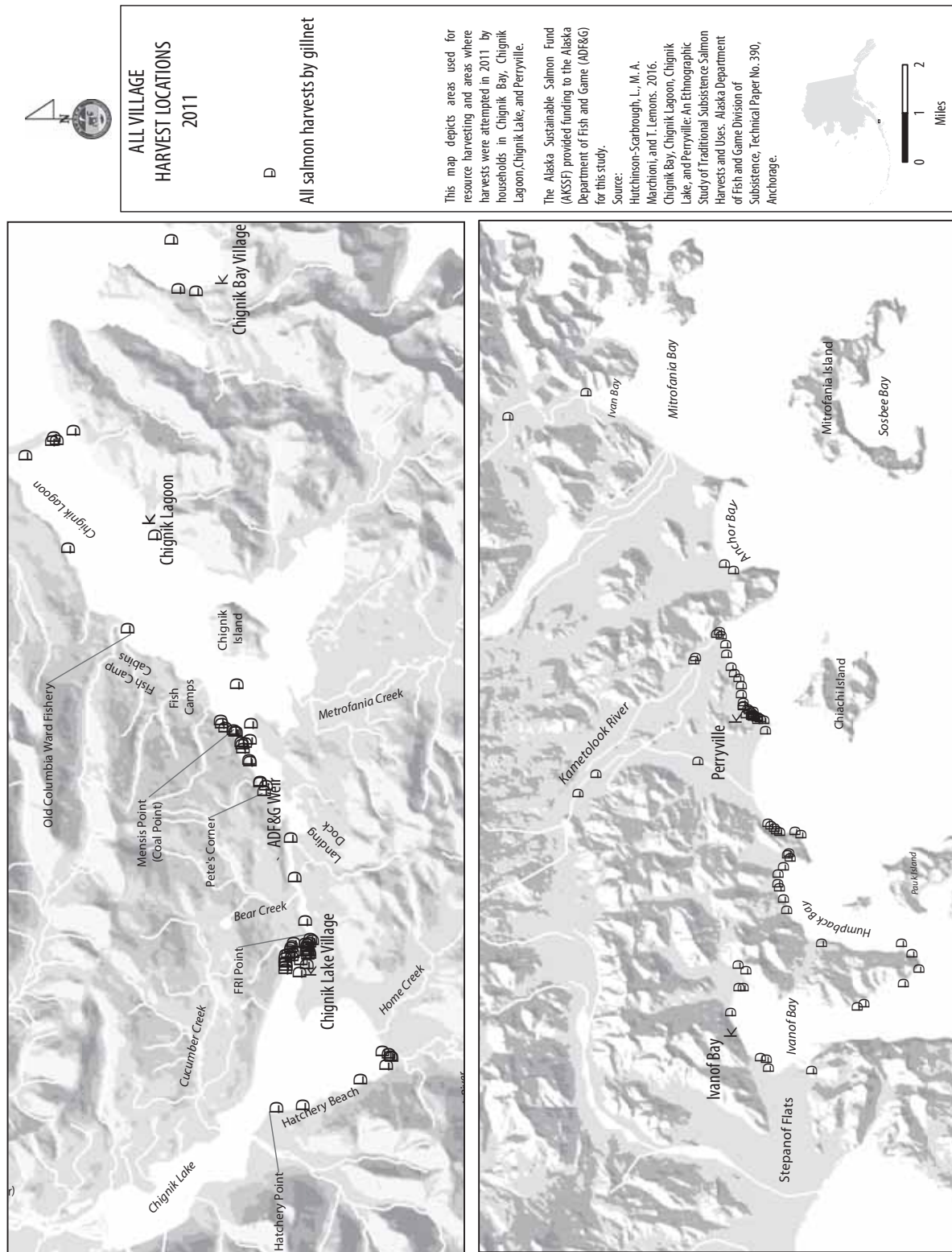


Figure 6-22.—All communities harvest locations, gillnet, 2011.

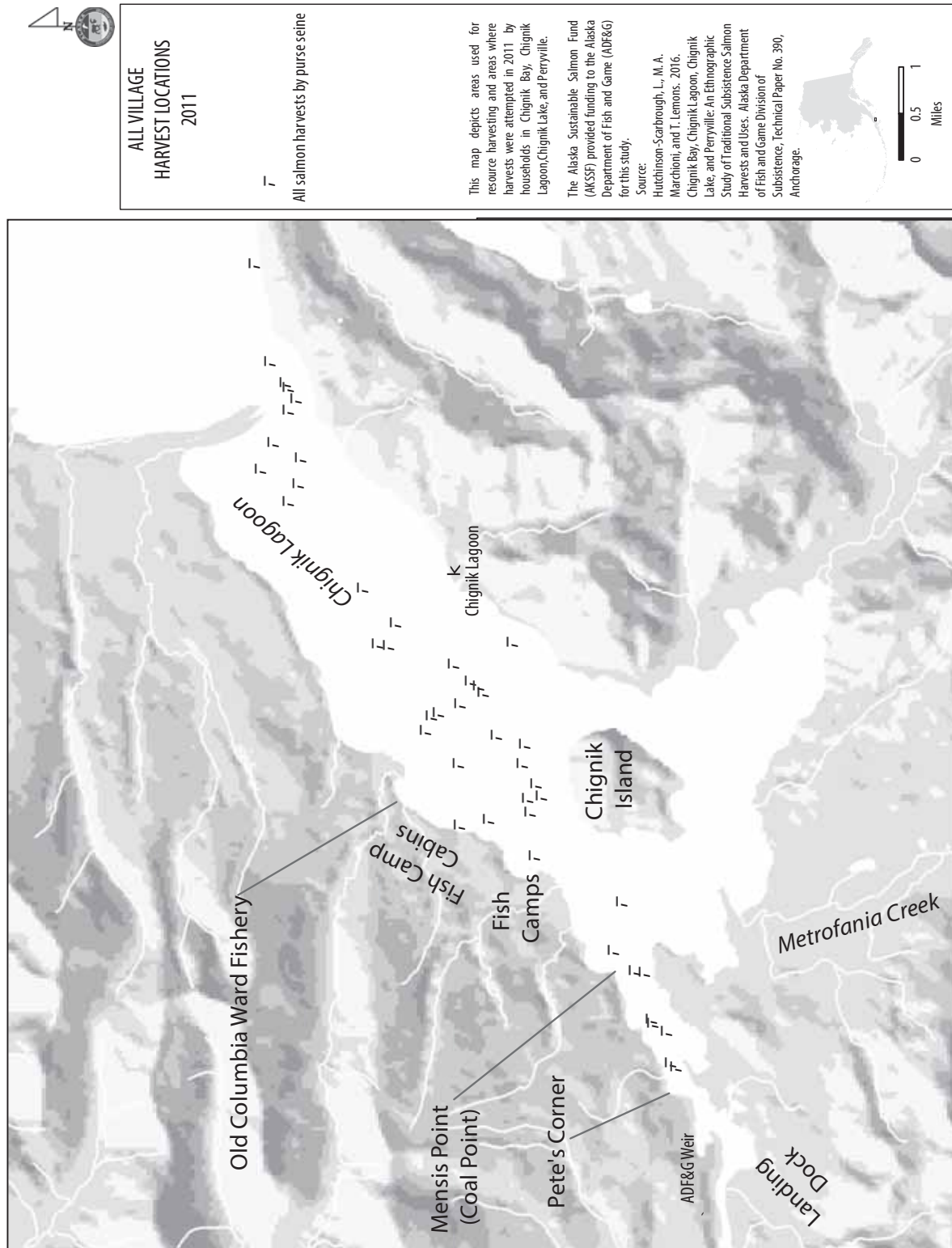


Figure 6-23.—All communities harvest locations, purse seine, 2011.

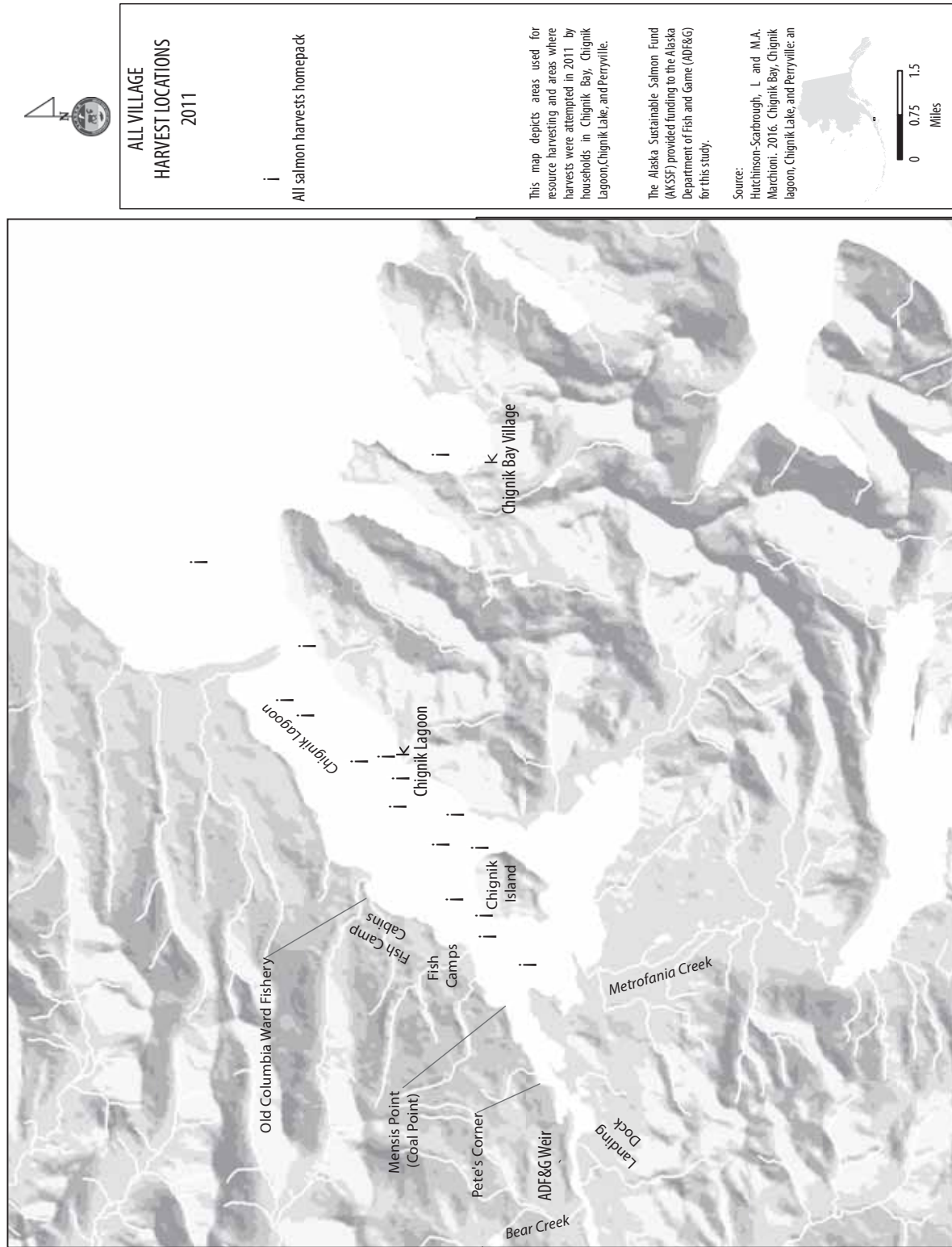


Figure 6-24.—All communities harvest locations, home pack, 2011.

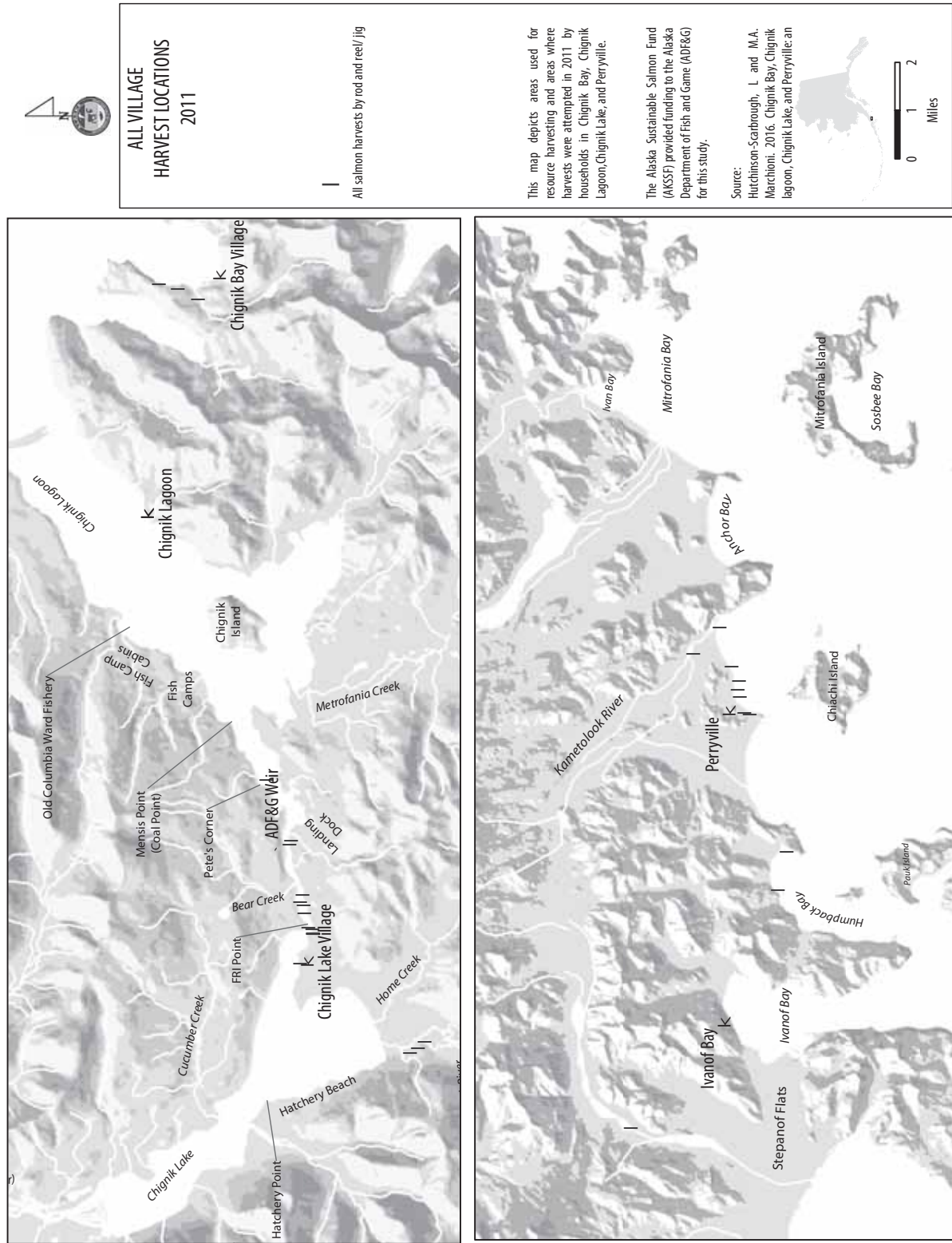


Figure 6-25.—All communities harvest locations, rod and reel/jig, 2011.

7. SUBSISTENCE SALMON HARVEST SURVEYS, SUBSISTENCE PERMITS, SPORT LICENSES AND COMMERCIAL RETENTION: AN ANALYSIS OF HARVEST DATA ACROSS TIME

The Division of Subsistence conducted comprehensive subsistence harvest surveys in the CMA in 1985 (1984 harvest year) with a total of 85 households in Chignik Bay, Chignik Lake, Chignik Lagoon, Perryville, and Ivanof Bay (Morris 1987). In 1990 (1989 harvest year), division staff conducted similar interviews with 105 Chignik Area households in the communities of Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay to update harvest and use data in the aftermath of the *Exxon Valdez* Oil Spill (Fall et al. 1995). In 1992 (April 1991 through March 1992) the division conducted 54 interviews in Chignik Bay and Chignik Lake (Hutchinson-Scarborough 1995a, 1995b). In 2004 (2003 harvest year) a total of 86 household interviews were done with residents of Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville. For the purposes of this study, 94 household harvest surveys were conducted in 2012 to capture harvest estimates for the 2011 harvest year. These survey efforts, over a span of 27 years, have used similar methods of data collection, and in many cases the same personnel, and represent an unusual opportunity to identify important changes that have taken place in the CMA fisheries and in individual communities. This chapter attempts to identify some of these important changes.

DEMOGRAPHIC DESCRIPTION OF THE CHIGNIK MANAGEMENT AREA

According to the U.S. Census, the total population of the Chignik Management Area was 515 people in 1980, marking the highest population to date (Table 1-1). The population remained relatively stable from 1980 through the 1990s. In 2000, the population decreased to 456 people, marking a 13% decline (59 people) since 1980. The 2010 U.S. Census results showed the lowest population since 1980 at 362, marking a 21% decline since 2000 and a 30% decline since 1980.

The individual communities within the CMA have all experienced significant population changes since 1980, with the exception of Perryville, which had a population of 111 residents in 1980 and 113 residents in 2010. Chignik Lagoon's population doubled from 48 residents in 1980 to 103 residents in 2000 but declined to 78 residents in 2010. Chignik Lake's population increased slightly from 1980 (138) to 2000 (145) but declined to 73 residents in 2010. Ivanof Bay lost 55% of its population from 1980 (40) to 2000 (22). Chignik Bay also showed a significant decline of 56% from 1980 (178) to 2000 (79), due in part to a change in how the U.S. Census interpreted group housing facilities for cannery workers. In 2010, Chignik Bay was the only community that increased in population size from 79 to 91 since 2000, a 13% increase (Table 1-1).

In all communities the ethnic make-up of households has consisted primarily of individuals who identify themselves as being Alaska Native, ranging from as high as 100% of households (Ivanof Bay in 2010) to as low as 53% of households (Chignik Bay in 1980). In 1990, 45% of individuals identified themselves as being Alaska Native in Chignik Bay, 57% in Chignik Lagoon, 92% in Chignik Lake, and 94% in both Perryville and Ivanof Bay. In 2010, 62% of individuals identified themselves as being Alaska Native in Chignik Bay, 74% in Chignik Lagoon, 96% in Chignik Lake, 97% in both Perryville and Ivanof Bay (Table 1-1). These percentages show an overall increase in the proportion of individuals in each community identifying themselves as being of Alaska Native ancestry.

COMMUNITY SUBSISTENCE SALMON USES AND HARVESTS OVER TIME

Figure 7-1 presents a comparison of salmon harvest composition by community and survey year. In each year a survey was conducted, the majority of salmon harvested in each of the 5 communities was sockeye

salmon. In 1984 and 1989, sockeye salmon made up 55% of all salmon harvested for home use by all communities in the CMA, increasing to 68% in 2003 and 75% in 2011. The percentage of coho salmon in the overall CMA salmon harvest has declined from 27% in 1984 to 15% in 2003, and 12% in 2011. Pink salmon have consistently made up 11–13% of the overall CMA salmon harvest from 1984–2003, but declined to 8% in 2011. Chum salmon composed 4–7% of the overall salmon harvests in 1984 and 1989, but made up less than 2% of the harvest in 2003 and 2011. Chinook salmon represented just 1% of the harvest in 1984 and 1989 but increased slightly to 4% in 2003, and 3% in 2011.

Because of the demographic changes over time, per capita harvest statistics are most useful in comparing harvest pattern or harvest quantities over time. Table 7-1 and Figure 7-2 show the total CMA per capita salmon harvest for home use by species and study year. The harvest, use, and sharing of salmon by community and study year, as well as the estimated total harvest of salmon by quantity and weight are described in Table 7-1. Across all study years, between 83–100% of all CMA households used salmon, 59–100% reported harvesting salmon, 33–100% received salmon, and 47–92% shared salmon. Across all study years, the per capita salmon harvest in communities of the CMA has ranged from 100–265 lb per person.

Chignik Bay’s estimated combined salmon harvests have fluctuated over time from as low as 112 lb per capita in 1989, to 171 lb in 1991, to 130 lb in 2003, and a high of 211 lb in 2011. Chignik Lagoon’s combined salmon harvests over time have also varied from a low of 100 lb per capita in 1989 to a high of 195 lb per capita in 2003. Chignik Lake’s combined salmon harvests have ranged from 139 lb per capita in 1984 to a high of 204 lb in 1991. Perryville’s combined salmon harvest numbers, similar to their population, have remained relatively stable over time ranging from a low of 202 lb in 1989 to 230 lb per capita in 2011 (Table 7-1).

CMA HARVESTS OF INDIVIDUAL SALMON SPECIES ACROSS STUDY YEARS

Sockeye Salmon

Table 7-2 shows the harvest and use of sockeye salmon “brights” (not including spawning or spawned-out salmon), and Table 7-3 shows the harvest and use of spawning and spawned-out salmon in the study communities by study year. All communities harvested and used sockeye salmon (“brights”) and spawned-out sockeye salmon in every study year. Sockeye salmon composed the majority of the Chignik Lake, Chignik Bay and Chignik Lagoon salmon harvests for all years when harvest surveys were done. The percentage of the harvest composed of sockeye salmon in Perryville and Ivanof Bay is lower than the other communities because of the predominance of coho, pink, and chum salmon spawning streams near both communities.

Spawning and spawned-out sockeye salmon are harvested primarily by households residing in Chignik Lake, which take between 10–27 lb of spawning or spawned-out salmon per person, compared to all other communities, which averages between 0–17 lb per person during study years (Table 7-3). Researchers found that Clark River and Hatchery Beach are very important locations for Chignik Lake residents to acquire fish during fall and winter months. Spawned-out and spawning salmon are used to fill smokehouses, and the activity of harvesting salmon in these stages is just as important as when the fish are bright. Harvesting of spawned-out and spawning salmon is discussed further in Chapter 8.

Coho Salmon

Table 7-4 shows harvests and uses of coho salmon and Table 7-5 shows spawning coho salmon. Households in all communities in every study year indicated coho salmon use ranging from as low as 25% in Chignik Lagoon to as high as 95% of households using coho salmon in Perryville. Coho harvesting households in Chignik Bay ranged from 22% in 2011 to 54% in 1989, with harvest quantities ranging from 6 lb per capita in 2011 to 35 lb in 1989. In 2011, 30% of Chignik Lagoon households harvested coho, in 1984 47% harvested, and in 1989, 40% harvested. Harvest quantities there ranged from as low as 203 lb per person

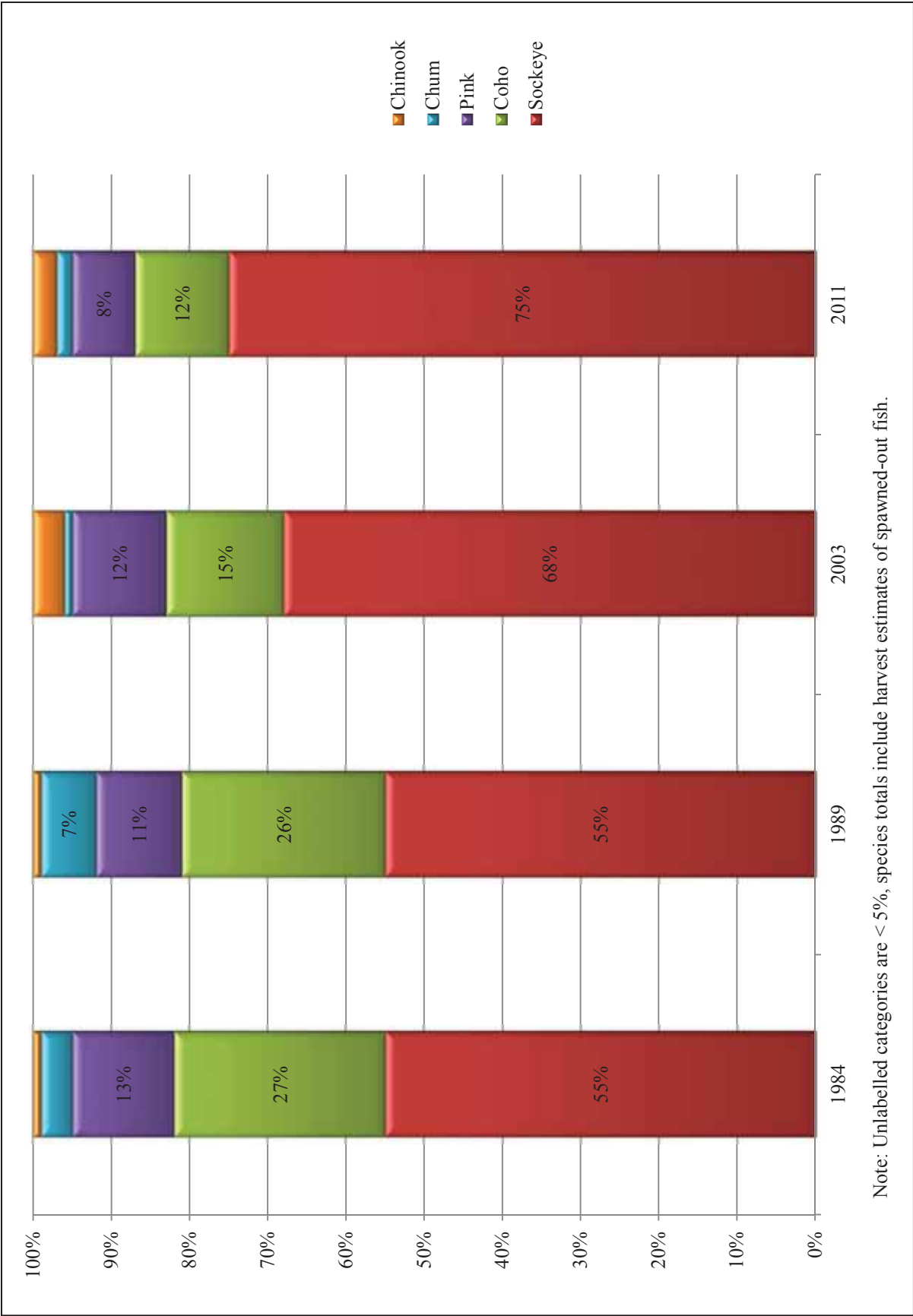


Figure 7-1.-Comparison of salmon harvest composition in the CMA communities, by year based on household surveys.

Table 7-1.—Harvests and uses of salmon, Chignik area communities, 1984, 1989, 1991, 2003, and 2011

Community	Year	Percentage of households					Estimated harvest		Pounds harvested	
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	Per household	Per person
Chignik Bay	1984	94.7	78.9	78.9	68.4	68.4	3,115.0	16,526.0	590.2	136.7
Chignik Bay	1989	97.1	80.0	77.1	71.4	48.6	2,563.0	13,460.0	345.1	111.8
Chignik Bay	1991	100.0	80.0	80.0	70.0	66.7	4,403.0	21,825.0	496.0	171.0
Chignik Bay	2003	100.0	59.1	59.1	77.3	50.0	2,178.0	10,956.0	377.8	129.9
Chignik Bay	2011	91.3	65.2	60.9	47.8	52.2	3,019.4	16,249.2	625.0	211.4
Chignik Lagoon	1984	88.2	70.6	64.7	52.9	47.1	1,637.0	8,833.0	401.4	119.7
Chignik Lagoon	1989	100.0	60.0	60.0	80.0	53.3	833.0	4,110.0	274.0	100.2
Chignik Lagoon	2003	100.0	87.5	87.5	50.0	50.0	2,574.0	13,959.0	634.5	195.2
Chignik Lagoon	2011	95.0	75.0	75.0	65.0	65.0	1,777.5	9,638.8	419.1	158.1
Chignik Lake	1984	100.0	100.0	100.0	52.2	47.8	4,080.0	21,805.0	703.3	139.4
Chignik Lake	1989	95.2	85.7	85.7	66.7	61.9	3,892.0	17,101.0	610.7	152.6
Chignik Lake	1991	100.0	95.8	95.8	70.8	91.7	6,599.0	26,614.0	806.4	203.7
Chignik Lake	2003	95.2	81.0	76.2	81.0	76.2	4,056.0	16,140.0	520.6	138.4
Chignik Lake	2011	100.0	86.4	81.8	86.4	86.4	3,366.4	17,858.6	661.4	194.0
Ivanof Bay	1984	83.3	83.3	83.3	33.3	66.7	1,823.0	9,729.0	972.9	265.3
Ivanof Bay	1989	100.0	100.0	100.0	100.0	71.4	1,437.0	5,971.0	852.9	186.5
Perryville	1984	100.0	95.0	95.0	60.0	60.0	5,249.0	24,764.0	917.1	215.8
Perryville	1989	100.0	88.9	88.9	51.5	63.0	5,206.0	23,451.0	756.4	202.2
Perryville	2003	100.0	96.3	96.3	81.5	85.2	6,253.0	28,269.0	856.6	229.0
Perryville	2011	96.4	75.0	67.9	75.0	60.7	4,868.2	23,238.2	707.9	230.5

Sources: Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

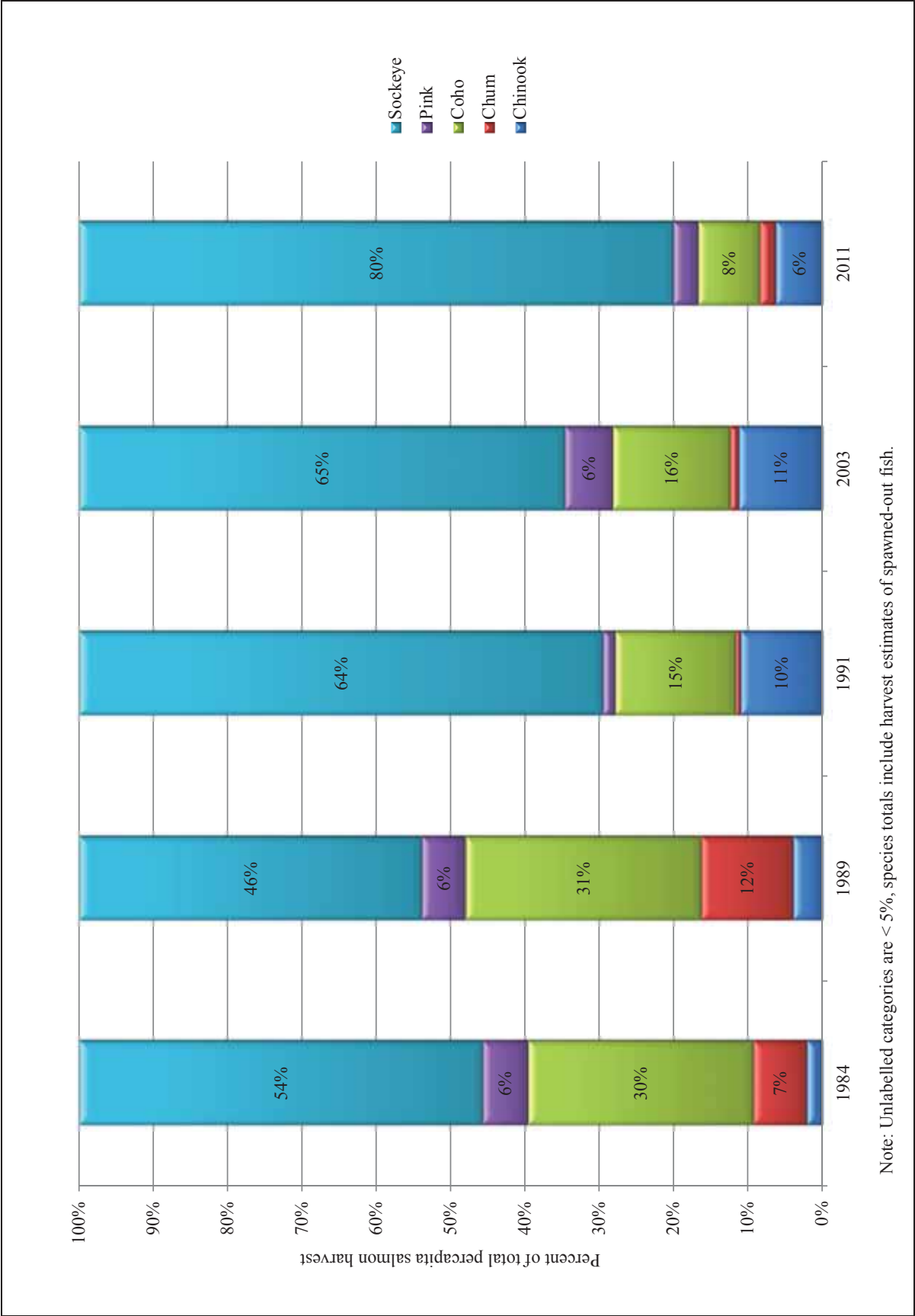


Figure 7-2. –Comparison of per capita harvests of salmon by study year based on household surveys, CMA, 1984, 1989, 1991, 2003, and 2011

Table 7-2.—Harvests and uses of sockeye salmon, Chignik area communities, 1984, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Estimated harvest		Pounds harvested per household per person	
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	Pounds per household per person
Chignik Bay	1984	94.7	73.7	73.7	63.2	63.2	2,633.0	13,641.0	487.1 112.8
Chignik Bay	1989	85.7	65.7	65.7	62.9	42.9	1,374.0	6,979.0	178.9 57.9
Chignik Bay	1991	86.7	63.3	60.0	53.3	46.7	2,398.0	12,110.0	275.2 94.9
Chignik Bay	2003	100.0	54.5	54.5	77.3	40.9	1,545.0	7,462.0	257.3 88.4
Chignik Bay	2011	87.0	60.9	56.5	39.1	43.5	2,572.9	13,640.1	524.6 177.4
Chignik Lagoon	1984	82.4	64.7	58.8	41.2	47.1	1,424.0	7,374.0	335.1 99.9
Chignik Lagoon	1989	93.3	33.3	33.3	73.3	26.7	463.0	2,352.0	156.8 57.3
Chignik Lagoon	2003	100.0	81.3	81.3	43.8	37.5	1,972.0	9,524.0	432.9 133.2
Chignik Lagoon	2011	95.0	75.0	70.0	55.0	65.0	1,373.2	7,280.1	316.5 119.4
Chignik Lake	1984	100.0	100.0	100.0	47.8	47.8	3,212.0	16,637.0	536.6 106.4
Chignik Lake	1989	95.2	81.0	76.2	42.9	52.4	2,488.0	12,639.0	451.3 112.8
Chignik Lake	1991	79.2	70.8	70.8	41.7	54.2	2,923.0	14,762.0	447.3 113.0
Chignik Lake	2003	90.5	71.4	66.7	76.2	57.1	2,448.0	11,822.0	381.3 101.4
Chignik Lake	2011	100.0	86.4	81.8	68.2	81.8	2,999.5	15,901.6	588.9 172.8
Ivanof Bay	1984	83.3	83.3	83.3	16.7	50.0	817.0	4,230.0	423.0 115.3
Ivanof Bay	1989	85.7	42.9	42.9	71.4	28.6	60.0	305.0	43.5 9.5
Perryville	1984	75.0	35.0	35.0	50.0	15.0	898.0	4,650.0	172.2 40.5
Perryville	1989	74.1	44.4	44.4	51.9	40.7	1,401.0	7,116.0	229.5 61.3
Perryville	2003	92.6	74.1	74.1	55.6	59.3	2,288.0	11,051.0	334.9 89.5
Perryville	2011	85.7	67.9	50.0	57.1	42.9	2,660.2	14,103.1	429.6 139.9

Sources Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

Note Values do not include spawning sockeye salmon.

Table 7-3.—Harvests and uses of spawning sockeye salmon, Chignik area communities, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Estimated harvest		Pounds harvested per person	
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	household
Chignik Bay	1989	25.7	11.4	11.4	14.3	2.9	139.0	329.0	8.4
Chignik Bay	1991	40.0	26.7	26.7	23.3	16.7	896.0	2,106.0	47.8
Chignik Bay	2003	22.7	18.2	18.2	9.1	13.6	179.0	403.0	13.9
Chignik Bay	2011	8.7	8.7	8.7	4.3	8.7	141.3	749.1	28.8
Chignik Lagoon	1989	66.7	33.3	33.3	33.3	26.7	225.0	531.0	35.4
Chignik Lagoon	2003	18.8	12.5	12.5	6.3	6.3	117.0	262.0	11.9
Chignik Lagoon	2011	5.0	5.0	5.0	0.0	5.0	51.8	274.4	11.9
Chignik Lake	1989	66.7	66.7	66.7	38.1	42.9	1,135.0	2,678.0	95.6
Chignik Lake	1991	87.5	79.2	79.2	50.0	79.2	2,610.0	6,135.0	185.8
Chignik Lake	2003	76.2	61.9	57.1	38.1	66.7	1,414.0	3,176.0	102.5
Chignik Lake	2011	31.8	31.8	27.3	18.2	27.3	168.1	891.4	33.0
Ivanof Bay	1989	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0
Perryville	1989	48.1	25.9	25.9	37.0	18.5	276.0	650.0	20.9
Perryville	2003	18.5	3.7	3.7	14.8	11.1	183.0	412.0	12.5
Perryville	2011	3.6	3.6	3.6	0.0	3.6	17.6	93.2	2.8

Sources Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

Note Data for spawning sockeye salmon is not available for 1994.

Table 7-4.—Harvests and uses of coho salmon, Chignik area communities, 1984, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Estimated harvest		Pounds harvested		
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	per household	per person
Chignik Bay	1984	63.2	47.4	47.4	31.6	31.6	343.0	1,985.0	70.8	16.4
Chignik Bay	1989	71.4	54.3	54.3	37.1	28.6	692.0	4,249.0	108.9	35.3
Chignik Bay	1991	63.3	50.0	50.0	33.3	40.0	804.0	4,308.0	97.9	33.7
Chignik Bay	2003	50.0	31.8	31.8	31.8	18.2	236.0	1,463.0	50.4	17.3
Chignik Bay	2011	43.5	21.7	21.7	30.4	17.4	88.2	445.7	17.1	5.8
Chignik Lagoon	1984	52.9	47.1	47.1	17.6	17.6	193.0	1,115.0	50.6	15.1
Chignik Lagoon	1989	60.0	40.0	40.0	33.3	33.3	101.0	620.0	41.3	15.1
Chignik Lagoon	2003	25.0	18.8	18.8	12.5	6.3	28.0	170.0	7.8	2.4
Chignik Lagoon	2011	30.0	35.0	30.0	5.0	10.0	60.3	305.1	13.3	5.0
Chignik Lake	1984	78.3	65.2	65.2	26.1	26.1	759.0	4,386.0	141.4	28.0
Chignik Lake	1989	61.9	66.7	61.9	19.0	38.1	189.0	1,163.0	41.5	10.3
Chignik Lake	1991	62.5	45.8	45.8	41.7	33.3	491.0	2,631.0	79.7	20.1
Chignik Lake	2003	28.6	19.0	19.0	14.3	19.0	63.0	394.0	12.7	3.4
Chignik Lake	2011	31.8	31.8	31.8	4.5	18.2	115.4	583.2	21.6	6.3
Ivanof Bay	1984	83.3	83.3	83.3	16.7	50.0	542.0	3,131.0	313.0	85.3
Ivanof Bay	1989	85.7	71.4	71.4	71.4	57.1	273.0	1,676.0	239.4	52.3
Perryville	1984	95.0	85.0	85.0	40.0	45.0	2,404.0	13,897.0	514.7	121.1
Perryville	1989	81.5	63.0	63.0	59.3	44.4	1,451.0	8,911.0	287.4	76.8
Perryville	2003	92.6	88.9	85.2	51.9	66.7	1,563.0	9,692.0	293.7	78.5
Perryville	2011	71.4	57.1	42.9	53.6	42.9	772.6	3,905.7	119.0	38.7

Sources: Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

Note: Values do not include spawning coho salmon.

in 2003 to as high as 15 lb per capita in 1984 and 1989. In Chignik Lake, the percentage of households harvesting coho ranged from 19% in 2003 to 65% in 1984, with harvest quantities ranging from 28 lb per person in 1984, to as low as 3–6 lb per person in recent years. Perryville has shown the most consistently high rates of coho use (71%-95% of households) because of its proximity to several coho spawning streams. However, Perryville has shown a considerable decline in coho salmon harvest numbers since 1984 when coho salmon harvests were documented at 121 lb per capita. The 2011 survey data show a coho salmon harvest in Perryville of just 39 lb per person for 2011.

Spawning coho salmon (Table 7-5) were primarily used by Perryville and Ivanof Bay households; however, Chignik Bay and Chignik Lake households also used them in select years. Perryville in 1989 harvested an average of 13 lb per person of spawning coho and in 2011 harvested 10 lb. Ivanof Bay in 1989 harvested 34 lb per person.

Pink Salmon

Pink salmon are an important resource for people in the CMA, particularly for residents of Perryville (and Ivanof Bay when people were living there) (Table 7-6). Many individuals in all CMA communities like to jar pink salmon and smoke their “bellies.” Notably, pink salmon harvests in 2011 in Perryville were one-half of what they were in 1984, similar to the decline in Perryville’s coho salmon use. Perryville residents also attribute the decline in pink salmon harvest to a decline in the pink salmon stock. Harvests per person in the 3 Chignik communities ranged from as low as 0 lb per person in Chignik Lagoon in 1984 and 1989 to as high as 5 lb per person in Chignik Lake in 1991.

Chinook Salmon

All communities in all study years indicated that they used and harvested Chinook salmon. The percentage of households using Chinook has ranged from as low as 7% of households in Perryville in 1989 to as high as 81% of households in Chignik Lagoon in 2003 (Table 7-7). Chignik Bay’s Chinook salmon harvests have varied from as low as 5 lb per person in 1984, to as high as 24 lb per capita in 1991. Chignik Lagoon households harvested 5 lb per person in 1984, 52 lb per person in 2003, and 25 lb per person in 2011. Chignik Lake residents have consistently harvested around 3–4 lb per person of Chinook salmon each study year, with the exception of 1991 when residents harvested 14 lb per person. Perryville’s relatively low levels of Chinook harvest have ranged from 1–7 lb per capita.

Chum Salmon

Most communities indicated use of chum salmon during study years, with the exception of Chignik Lagoon in 1984 and 1989, and Chignik Lake in 2003 (Table 7-8). Communities that used chum salmon ranged from as low as 6% of households in Chignik Lagoon in 2003 to as high as 71% of households in Ivanof Bay in 1989. As with coho and pink salmon, Perryville and Ivanof Bay had the highest harvest rates of chum salmon ranging from a low of 21% of households harvesting chum in Perryville 2011 to a high of 71% harvesting chum in Ivanof Bay in 1989. Harvest quantities for chum salmon in Perryville ranged from 7 lb per person in 2003 to as high as 21 lb per person in 1989. Ivanof Bay in 1984 and 1989 harvested the most chum salmon of all communities with 51 to 67 lb per person respectively.

The Chignik Management Area has required a fisher to obtain a subsistence salmon permit since 1977. Annual estimates of subsistence salmon harvests by species based on returned permits from 1977 to 2013 are shown in Figure 5-1. Harvest estimates over time have remained fairly consistent, with sockeye salmon always representing the main species harvested.

Table 7-5.—Harvests and uses of spawning coho salmon, Chignik area communities, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Give		Estimated harvest		Pounds harvested	
		Use %	Attempt %	Harvest %	Receive %	%	%	Number	Pounds	per household	per person
Chignik Bay	1989	11.4	2.9	2.9	8.6	0.0	0.0	6.0	16.0	0.4	0.1
Chignik Bay	1991	6.7	6.7	3.3	3.3	3.3	3.3	22.0	55.0	1.2	0.4
Chignik Bay	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Bay	2011	8.7	8.7	8.7	4.3	8.7	8.7	141.3	749.1	28.8	9.7
Chignik Lagoon	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lagoon	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lagoon	2011	5.0	5.0	5.0	0.0	5.0	5.0	51.8	274.4	11.9	4.5
Chignik Lake	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lake	1991	16.7	12.5	12.5	8.3	12.5	12.5	78.0	195.0	5.9	1.4
Chignik Lake	2003	4.8	4.8	4.8	0.0	0.0	0.0	1.0	4.0	0.1	0.0
Chignik Lake	2011	31.8	31.8	27.3	18.2	27.3	27.3	168.1	891.4	33.0	9.7
Ivanof Bay	1989	85.7	71.4	71.4	71.4	57.1	57.1	375.0	1072.0	153.2	33.5
Perryville	1989	48.1	40.7	37.0	25.9	22.2	22.2	537.0	1537.0	49.5	13.2
Perryville	2003	22.2	18.5	18.5	7.4	18.5	18.5	326.0	941.0	28.5	7.6
Perryville	2011	10.7	10.7	7.1	3.7	7.1	7.1	199.3	1007.6	30.7	10.0

Sources Hutchinson-Scarborough et al., 1996 and ADF&G Subsistence Division household surveys, 2012.

Note Data for spawning coho salmon is not available for 1984.

Table 7-6.—Harvests and uses of pink salmon including spawning pink salmon, Chignik area communities, 1984, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Estimated harvest			Pounds harvested	
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	per household	per person
Chignik Bay	1984	42.1	26.3	26.3	26.3	15.8	93.0	251.0	8.9	2.0
Chignik Bay	1989	48.6	37.1	37.1	11.4	17.1	204.0	506.0	12.9	4.2
Chignik Bay	1991	23.3	23.3	23.3	0.0	6.7	67.0	142.0	3.2	1.1
Chignik Bay	2003	18.2	13.6	13.6	4.5	4.5	40.0	112.0	3.9	1.3
Chignik Bay	2011	21.7	17.4	13.0	8.7	8.7	50.9	118.3	4.5	1.5
Chignik Lagoon	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lagoon	1989	26.7	20.0	20.0	6.7	0.0	6.0	15.0	0.9	0.3
Chignik Lagoon	2003	31.3	31.3	31.3	0.0	6.3	99.0	281.0	12.8	3.9
Chignik Lagoon	2011	35.0	30.0	20.0	15.0	20.0	117.3	272.7	11.9	4.5
Chignik Lake	1984	30.4	26.1	26.1	13.0	13.0	43.0	117.0	3.7	0.7
Chignik Lake	1989	28.5	23.8	23.8	4.8	4.8	47.0	116.0	4.1	1.0
Chignik Lake	1991	37.5	25.0	25.0	25.0	25.0	287.0	603.0	18.2	4.6
Chignik Lake	2003	19.0	14.3	14.3	14.3	4.8	79.0	224.0	7.2	1.9
Chignik Lake	2011	18.2	18.2	18.2	9.1	9.1	34.4	79.9	3.0	0.9
Ivanof Bay	1984	50.0	50.0	50.0	16.7	50.0	142.0	383.0	38.2	10.4
Ivanof Bay	1989	85.7	71.4	71.4	71.4	42.9	205.0	508.0	72.6	15.6
Perryville	1984	80.0	65.0	65.0	35.0	45.0	1,729.0	4,669.0	172.9	40.6
Perryville	1989	77.8	66.7	66.7	37.0	37.0	1,056.0	2,620.0	84.5	22.5
Perryville	2003	85.2	81.5	81.5	29.6	55.6	1,637.0	4,648.0	140.8	37.7
Perryville	2011	62.1	55.2	44.8	34.5	27.6	860.6	2,000.8	58.8	19.8

Sources: Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

Table 7-7.—Harvests and uses of Chinook salmon, Chignik area communities, 1984, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Estimated harvest		Pounds harvested per person	
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	household
Chignik Bay	1984	47.4	31.6	31.6	15.8	5.3	35.0	588.0	21.0
Chignik Bay	1989	42.9	37.1	61.4	20.0	8.6	57.0	886.0	22.7
Chignik Bay	1991	53.3	46.7	43.3	16.7	30.0	196.0	3,021.0	66.6
Chignik Bay	2003	59.1	27.3	27.3	40.9	18.2	133.0	1,381.0	47.6
Chignik Bay	2011	43.5	26.1	26.1	21.7	26.1	126.6	1,093.9	42.1
Chignik Lagoon	1984	29.4	17.6	17.6	23.6	5.9	21.0	344.0	15.6
Chignik Lagoon	1989	80.0	46.7	46.7	16.7	26.7	38.0	592.0	39.4
Chignik Lagoon	2003	81.3	75.0	75.0	18.8	37.5	359.0	3722.0	169.2
Chignik Lagoon	2011	65.0	55.0	50.0	25.0	15.0	173.7	1500.3	65.2
Chignik Lake	1984	47.8	43.5	34.8	13.0	21.7	26.0	426.0	13.7
Chignik Lake	1989	42.9	38.1	33.3	23.8	14.3	32.0	499.0	17.8
Chignik Lake	1991	58.3	41.7	41.7	20.8	33.3	122.0	1,867.0	56.5
Chignik Lake	2003	42.9	33.3	33.3	23.8	14.3	50.0	520.0	16.8
Chignik Lake	2011	59.1	45.5	31.8	40.9	40.9	43.0	371.1	13.7
Ivanof Bay	1984	33.3	33.3	33.3	0.0	33.3	7.0	111.0	11.0
Ivanof Bay	1989	57.1	42.9	42.9	28.6	28.6	5.0	78.0	11.1
Perryville	1984	15.0	15.0	15.0	0.0	0.0	24.0	404.0	14.9
Perryville	1989	7.4	7.4	7.4	0.0	10.0	8.0	125.0	4.0
Perryville	2003	40.7	25.9	25.9	22.2	22.2	61.0	634.0	19.2
Perryville	2011	32.1	35.7	25.0	21.4	32.1	84.8	732.3	22.3

Sources: Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

Table 7-8.—Harvests and uses of chum salmon, Chignik area communities, 1984, 1989, 1991, 2003, and 2011.

Community	Year	Percentage of households				Estimated harvest		Pounds harvested		
		Use %	Attempt %	Harvest %	Receive %	Give %	Number	Pounds	household per	person per
Chignik Bay	1984	26.3	10.5	10.5	21.1	5.3	10.0	61.0	2.1	0.5
Chignik Bay	1989	28.6	22.9	22.9	5.7	5.7	91.0	495.0	12.6	4.1
Chignik Bay	1991	23.3	6.7	6.7	16.7	6.7	18.0	84.0	1.9	0.6
Chignik Bay	2003	18.2	18.2	13.6	9.1	4.5	18.0	96.0	3.3	1.1
Chignik Bay	2011	13.0	13.0	13.0	0.0	4.3	39.6	202.1	7.8	2.6
Chignik Lagoon	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lagoon	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lagoon	2003	6.3	6.3	0.0	0.0	6.3	0.0	0.0	0.0	0.0
Chignik Lagoon	2011	15.0	20.0	10.0	0.0	5.0	1.2	6.2	0.3	0.1
Chignik Lake	1984	17.4	17.4	17.4	8.7	4.3	40.0	239.0	7.7	1.5
Chignik Lake	1989	9.5	4.8	4.8	4.8	0.0	1.0	7.0	0.2	0.0
Chignik Lake	1991	12.5	4.2	4.2	12.5	4.2	42.0	216.0	6.5	1.6
Chignik Lake	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lake	2011	13.6	13.6	13.6	0.0	9.1	6.1	31.3	1.2	0.3
Ivanof Bay	1984	50.0	50.0	50.0	33.3	50.0	317.0	1,875.0	187.4	51.1
Ivanof Bay	1989	71.4	71.4	71.4	57.1	42.9	396.0	2,146.0	306.6	67.0
Perryville	1984	60.0	50.0	50.0	15.0	25.0	193.0	1,143.0	42.3	9.9
Perryville	1989	51.9	44.4	44.4	29.6	22.2	454.0	2,458.0	79.2	21.2
Perryville	2003	55.6	48.1	44.4	11.1	25.9	163.0	844.0	25.6	6.8
Perryville	2011	32.1	35.7	21.4	21.4	14.3	273.2	1,395.5	42.5	13.8

Sources Hutchinson-Scarborough et al., 1996, and ADF&G Subsistence Division household surveys, 2012.

COMMUNITY SUBSISTENCE SALMON HARVESTS BY SPECIES AND GEAR TYPE, CHIGNIK MANAGEMENT AREA COMMUNITIES, 1984, 1989, 2003, AND 2011

In 2011, harvest methods for obtaining salmon for home use did not vary greatly from the previous study years. Subsistence gillnets and seines were the gear primarily used to harvest all salmon except for Chinook salmon. The percentages of households using each gear type to harvest salmon during the study years are presented in Table 7-9. In 1984, 30–47% of households said they removed salmon from their commercial harvest for home use, and 29–85% harvested fish using subsistence gillnets or seines, and 5–48% harvested subsistence salmon using rod and reel, jig, or hook and line gear. Harvest methods by households varied throughout the other study years, but in all study years, these 3 main gear methods were used to harvest salmon for subsistence home use. In 2011, subsistence gear was used by 35–77% of all households for obtaining salmon, while commercial retention was used by 18–55% of all households; and rod and reel or jig gear was used by 9–41% of all community households in 2011 according to household surveys (Table 7-9).

COMPARISONS OF HOUSEHOLD SURVEY AND PERMIT DATA FOR 2011

Since 1977, all Alaska residents who want to obtain salmon for subsistence use from the CMA must obtain and return a subsistence salmon permit. In 1984, 1989, 1991, 2003, and 2011 the Division of Subsistence conducted in-person household harvest surveys with CMA residents. In years when household harvest surveys have been conducted, the data from the surveys are combined with the permit data to create a more accurate harvest assessment. Table 5-3 shows the 2011 subsistence salmon harvest estimates based on returned permits and surveys combined. Table 7-10 shows 2011 subsistence salmon harvests by all CMA community residents based on 2011 permit returns.

Tables 5-3 and 7-10 display a significant difference between the salmon harvests accounted for only on returned permits and the harvests accounted for by combining permit data and data from subsistence harvest surveys. In 2011, 52 permits were issued to residents of the CMA, 39 were returned, and the total estimated salmon harvest was 7,954 total salmon, 6,764 (85%) of which were sockeye salmon, 642 (8%) were coho salmon, 92 (1%) were chum salmon, 421 (5%) were pink salmon, and 35(<1%) were Chinook salmon. If the data from permit returns are conflated with data from subsistence salmon harvest surveys, the harvest numbers are significantly higher. Table 5-3 has a column titled “permits issued and returned,” and these numbers are higher than those in Table 7-10, which only reflects the subsistence permit returns. When the data are combined, all completed harvest surveys are counted as permits both issued and returned. The harvest numbers therefore increase as households that did not return a permit are accounted for, and households that may have inaccurately reported their harvest numbers for a variety of reasons are corrected. In 2011, according to household harvest data and permit data combined, 95 CMA households were either issued a permit or were contacted for a household survey, and 76 CMA households either returned their permit or participated in a household harvest survey. The combined data shows a total harvest of 13,732 salmon, 10,578 (77%) of which were sockeye salmon, 1,458 (11%) were coho salmon, 355(3%) were chum salmon, 1,289 (9%) were pink salmon.

Below are a few explanations for the significant change between the permit data and the permit and survey data combined.

- Some households do not obtain a permit each year, particularly in Perryville, because their community is very isolated. Aside from Division of Subsistence researchers visiting throughout the years, they have no ADF&G employees to remind them to obtain a permit or to answer questions.
- Many households return their permits at the end of the summer season before they do the majority of their spawned-out sockeye, coho, and pink salmon fishing.
- Some households believe that if they require more fish to feed their families than the permit allows, that recording their overage might get them into trouble with fish and game

Table 7-10.—Estimated subsistence salmon harvests based on permit survey data only, Chignik area communities, 2011.

Community	Permits		Estimated salmon harvest ^a			
	Issued	Returned	Chinook	Sockeye	Coho	Chum
Chignik Bay	8	5	6	1,666	74	32
Chignik Lagoon	14	13	18	1,258	102	2
Chignik Lake	12	11	9	2,102	67	0
Perryville	18	10	2	1,739	400	58
Subtotal, Chignik Area residents	52	39	35	6,764	642	92
Anchorage	7	4	0	875	0	0
Auke Bay	1	1	0	4	0	0
Homer	2	1	0	100	0	0
Kodiak	4	2	0	116	0	0
Seldovia	1	1	0	113	0	0
Subtotal, other Alaska residents	15	9	0	1,208	0	0
Total	67	48	35	7,972	642	92

Source ADF&G Division of Subsistence, ASFDB 2012 (ADF&G 2013).

a. Harvest estimates are from 2011 permit returns only.

enforcement, or reflect poorly on their personal and their community subsistence rights, because those who are unfamiliar with the subsistence way of life do not fully understand how their community harvests and sharing patterns operate.

- Households are inconsistent about how they record the salmon they take home from their commercial catches, and many times these fish never get accounted for unless there is a household harvest survey.

These are all just a few reasons that researchers found to explain why the harvest estimates increase during years when harvest surveys are conducted. The most accurate data for use in management regimes are certainly collected during the years when the Division of Subsistence conducts their face-to-face household harvest surveys.

COMMERCIAL SALMON HARVEST RETENTION

The subsistence permit program for the CMA does not account for salmon removed from commercial catches for home use. Salmon removed from commercial catches are reported to ADF&G Division of Commercial Fisheries on commercial fish tickets (Table 7-11). Area residents consider commercially harvested salmon that they retain for home use to be subsistence salmon (Hutchinson-Scarbrough and Fall 1996; CMA key respondents' personal communications to Hutchinson-Scarbrough, October 2010).

Table 7-11 displays the home pack harvests reported on commercial fish tickets from 1984 to 2012. 1996 shows a disproportionate number of chum and pink salmon retained from commercial catches because an oversupply of pink salmon harvested in the region in 1995 left processors reluctant to purchase either pink or chum salmon from local fishers the following year. ADF&G also implemented the Waste of Salmon regulation (5 AAC 93.310) in 1996 in an effort to prevent the waste of salmon (Owen and Sarafin 1999). As a result, more chum and pink salmon were retained from commercial catches for home use in 1996 compared to other years.

Commercial salmon fishers in the CMA reported on their commercial fish tickets a total of 1,098 salmon removed from their commercial harvests for home use or home pack in 2010, 481 in 2011, and 826 in 2012. Without the ability to obtain salmon from their commercial catches for home use, many families in all 4 study communities would be unable to harvest the amount of salmon they require for subsistence purposes.

SPORT ANGLER HARVESTS IN THE CHIGNIK RIVER DRAINAGE, CHINOOK SALMON

This study did not investigate guided angler sport fishing effort or harvest numbers. According to the ADF&G Division of Sport Fish Logbook Program, an average of 181 sport anglers have fished in the Chignik River with a licensed guide every year from 2005–2013. In 2011, 207 guided sport anglers fished in the Chignik River, which was the highest number of guided anglers since 2007, and was also the year prior to when interviews were conducted. Data for 2012 and 2013 showed lower numbers of guided anglers than 2011.¹ A notable decrease in the sport Chinook salmon harvest occurred in 2012 because the Chignik River was restricted to catch and release, and bait was prohibited for use by sport fishers for a portion of 2012 due to a poor Chinook return.²

According to the ADF&G sport fishing website, on average, approximately 7,900 freshwater and saltwater sport anglers have fished annually in Area R, the Alaska Peninsula/Aleutian Islands area, which encompasses the CMA, since 1996. Harvest estimates are acquired by ADF&G Division of Sport Fish from annual mail-out surveys sent to a stratified random sample of households that acquired at least one type of sport fish license. Harvest estimates show a steady decline in Chinook salmon caught with sport licenses since 1996.

1. ADF&G Division of Sport Fish "Guide and Charter Logbook Multi-Year Summary 2006–2014." Accessed January 30, 2016. URL not publicly available due to confidential content.

2. ADF&G, "Chignik River king salmon sport fishery restricted to nonretention," Emergency Order No. 2-KS-4-40-12, July 12, 2012, Kodiak, http://www.adfg.alaska.gov/Static-sf/EONR/PDFs/2012/R2/EO_2-KS-4-40-12_Chignik%20KS.pdf (Accessed July 29, 2015).

In 1996, sport anglers harvested an estimated 3,891 Chinook salmon, and in 2013, there were an estimated 1,966 Chinook salmon harvested, based on mail-out surveys. The majority of these Chinook salmon were caught in fresh waters.³

Table 7-11.—Chignik area salmon removed from commercial catches for home use, 1994–2012.

Year	Salmon harvest, number					Total
	Chinook	Sockeye	Coho	Chum	Pink	
1994	0	0	0	0	0	0
1995	64	0	913	5	0	982
1996	40	40	20	21,090	5,262	26,452
1997	88	664	0	0	0	752
1998	108	267	27	155	0	557
1999	211	26	200	3	0	440
2000	20	0	0	0	0	20
2001	90	217	7	129	7	450
2002	77	1,371	164	0	0	1,612
2003	309	2,411	74	0	407	3,201
2004	158	1,690	0	0	0	1,848
2005	271	1,364	5	115	234	1,989
2006	68	267	175	0	0	510
2007	16	205	56	1	0	278
2008	15	0	0	0	0	15
2009	75	93	0	1	0	169
2010	118	973	0	0	7	1,098
2011	142	323	16	0	0	481
2012	51	513	0	240	22	826
5-year average (2008–2012)	80	380	3	48	6	518
10-year average (2003–2012)	122	784	33	36	67	1,042
Historical average (1994–2012)	101	549	87	36	38	811

Source ADF&G CFMD reported commercial salmon ticket reports.

a. Averages for chum and pink salmon do not include harvest numbers for 1996.

3. Alaska Department of Fish and Game. n.d. “Alaska Sport Fishing Survey.” Accessed January 2016. <http://www.adfg.alaska.gov/sf/sportfishingsurvey/index.cfm>.

8. RESULTS 2010–2012 ETHNOGRAPHIC FIELDWORK

CASE STUDIES

Researchers took advantage of opportunities to accompany, observe, and assist local residents with salmon fishing and salmon processing activities whenever possible. Their observations are presented here as case studies that provide additional insights into these important subsistence activities. Case studies provide ethnographic information about subsistence fishing and processing in each community. Included in these case examples for Chignik Lake, Chignik Lagoon, and Perryville are descriptions of facilities at fish camps and processing locations, the social organization of harvesting and processing, harvest estimates, harvest methods, and the disposition of the harvest. None of the cases are similar, and each case study was chosen to demonstrate different aspects of fishing and processing as they relate to the research questions. Chignik Bay is not represented in a case study. Researchers were not able to conduct participant observation with any families in Chignik Bay due to weather and timing with the commercial fisheries openings in 2011 and 2012.

Case Study A: Chignik Lake Family, Early-Run Sockeye Salmon, Set Gillnet, June 2011

This case example describes the social organization of subsistence fishing and processing for residents of Chignik Lake based on one family's activities in June 2011 (Figure 8-1). The traditional ecological knowledge that informs processing is evident; however, the traditional roles based on age, sex, and skill level are not entirely represented.

In June 2011, a husband and wife, their 17-year old granddaughter visiting from Port Heiden and their 7-year old grandnephew that lives with his grandmother in another Chignik Lake household set a gillnet and caught 60 bright sockeye salmon. They baked and ate 1 salmon with researchers on the beach, hung 45 of the fish in the smokehouse (Plate 8-1), gave researchers 8 fish to take home, and vacuum sealed and froze the 6 remaining salmon. All these fish harvested were recorded on one permit issued to the adult male.



Plate 8-1.—Subsistence sockeye salmon hanging in a smokehouse, Chignik Lake, 2012.

To harvest the fish, the family took a small skiff across Chignik Lake to the beach opposite the community of Chignik Lake. The husband took one end of their gillnet to shore, where he tied the net's line to a series of tree roots, which were uncovered in the sand. The rest of the net remained on the skiff in a carefully laid pile so that it would not get caught as it was let out of the boat. After anchoring one end of the net to the beach, the husband and the boy slowly motored the boat out approximately 20 ft upriver while letting the net out carefully. Once they had let the entirety of the net slightly up river of the shore, they dropped a net anchor and buoy attached to the other end of the net and took the skiff back to shore. Fish began to hit the net fairly quickly. The husband set up an old metal school desk at the water's edge, placed a 4 ft by 4 ft scrap of gillnet on top of the desk so the fish would not slide, and sharpened 4 standard, white-handled fillet knives for cutting the salmon (plates 8-2 and 8-3). The 2 children helped however they could and played in the water when they were not needed. The wife stood on the beach watching the net for signs of fish hitting the net.

Eventually, when the net appeared sufficiently full, the husband and the boy got in the skiff and drove out beside the net. They began at the end farthest from shore. Because the husband was not planning on pulling the net yet, he began picking it by pulling the buoy onboard the boat, but only enough so that the entire depth of mesh was visible to him. He pulled the mesh up on the boat in this fashion, hand over hand, the entire length of the net. Each time a fish was discovered he would pull the entire section of mesh onboard the skiff and remove the fish from the mesh head first. This meant locating the head so that it was not covered in mesh and then pulling its entire body through the mesh. Each fish was thrown in the middle compartment of the skiff. Of the 2 benches in the skiff, the man sat on the bench back by the outboard motor so he could control the skiff while they were picking fish from the net, and the boy sat on the front bench. When they reached the end of the net closest to the shore, the granddaughter asked to be picked up. Her grandfather came to the beach and picked her up. She sat next to the boy on the front bench of the boat. She helped to pick the net, until they had a total of 60 sockeye salmon. "We only take what we need, and this is all we need now," said the man (Plate 8-4).

The man went back out and began to retrieve the net, starting at the end with the buoy and anchor. Hand over hand, he pulled the net into the boat while letting the skiff idle. Any live fish he caught in the net during this process he threw back in the water (Plate 8-5). When he worked his way into shore, he untied the net from the beach, threw it into the boat, and secured the boat to shore.

The man and women each took a fish, stood opposite each other at the cutting table and proceeded to process split-fish for hanging in the smokehouse. They removed the fins first (caudal, anal, then dorsal), then the heads. Next they split the fish with a fillet knife pressed directly to the fish's spine, starting at the head end and moving down to about one-half inch from the end of the spine (start of the caudal fin). At this end point, they made forceful cuts through the back bone just beside the caudal fin, flipped the fish over and took the same action along the spine on the other side. This method of cutting created "split fish" ready to be hung over a wooden rod, and allowed an equal sized side of salmon to hang on either side of the rod.

The granddaughter tried to split a few fish but eventually lost interest. The woman taught Hutchinson-Scarborough to split a fish, showing her the same technique demonstrated by her husband (Plate 8-6). Marchioni filleted the fish that had been given to the researchers and then continued to split fish for the family. After splitting 8 fish, the woman said she was tired and walked away to rest. The man walked over to start a fire on the beach. The woman and granddaughter then took a fresh sockeye salmon fillet and wrapped it in aluminum foil and put it on a small iron grate over the fire. They cooked the fish while the researchers and the man continued to split fish. The granddaughter eventually went off on her own and picked some "puchki" (wild celery) harvested from the center of newly sprouting plants, and ate most of it. The remaining puchki was brought back to be jarred for the winter.

When all the fish were split, everyone gathered around the fresh-baked fish and began to eat and talk about the success of the day's harvest. Because all pieces of the carcasses were thrown back in the lake as they were processed, there was not much to clean up. The man then cleaned off the deck of the skiff with water from the lake using a bucket, then he splashed the gillnet in the lake several times to clean off scales and meat and then he threw it into the skiff. The women and researchers then placed their personal items and garbage in the skiff (the metal grate for cooking was left for the next people). All family members and

researchers took a seat in the boat, and the man drove back across the lake to the community of Chignik Lake. Once on the opposite shore, the family loaded all the fish from the skiff into a large bucket on the back of an ATV and drove it to the family's house. Marchioni and Hutchinson-Scarborough did not immediately join the family to their home but did so several hours later after changing their clothes and having dinner. When they visited the family home a couple of hours later the researchers saw the salmon hanging in the family's small smokehouse (Plate 8-7). All of the split fish had been laid on wooden poles, all at the same level in the smokehouse, flesh facing outward, with approximately 1 in spacing between each fish.

Researchers observed the couple vacuum seal the fish they were going to freeze in the kitchen of their home (Plate 8-8). The man placed 2 fillets at a time into a large vacuum seal bag, flesh facing outward, and then the woman carefully placed it through the vacuum sealer so as to push out any pockets of air. Then they labeled the vacuum-sealed fish by date and put in the large freezer at the far end of the kitchen. The couple walked the researchers through the process, emphasizing that the most important part was to eliminate any pockets of air and to not grab the edge of the bag in the vacuum sealer. They mentioned how much easier life was now that they had vacuum sealers. The granddaughter, the young boy, and their grandnephew watched television until the granddaughter got hungry and boiled a salmon head for herself and ate the entire thing except for the bones.

Researchers were able to interview this couple numerous times over the 3-year span of this study and were able to observe them make many meals for their family out of the salmon they had caught. Fish pie, locally known as *pee'rok*, and kippered fish were 2 very important meals made over the years.

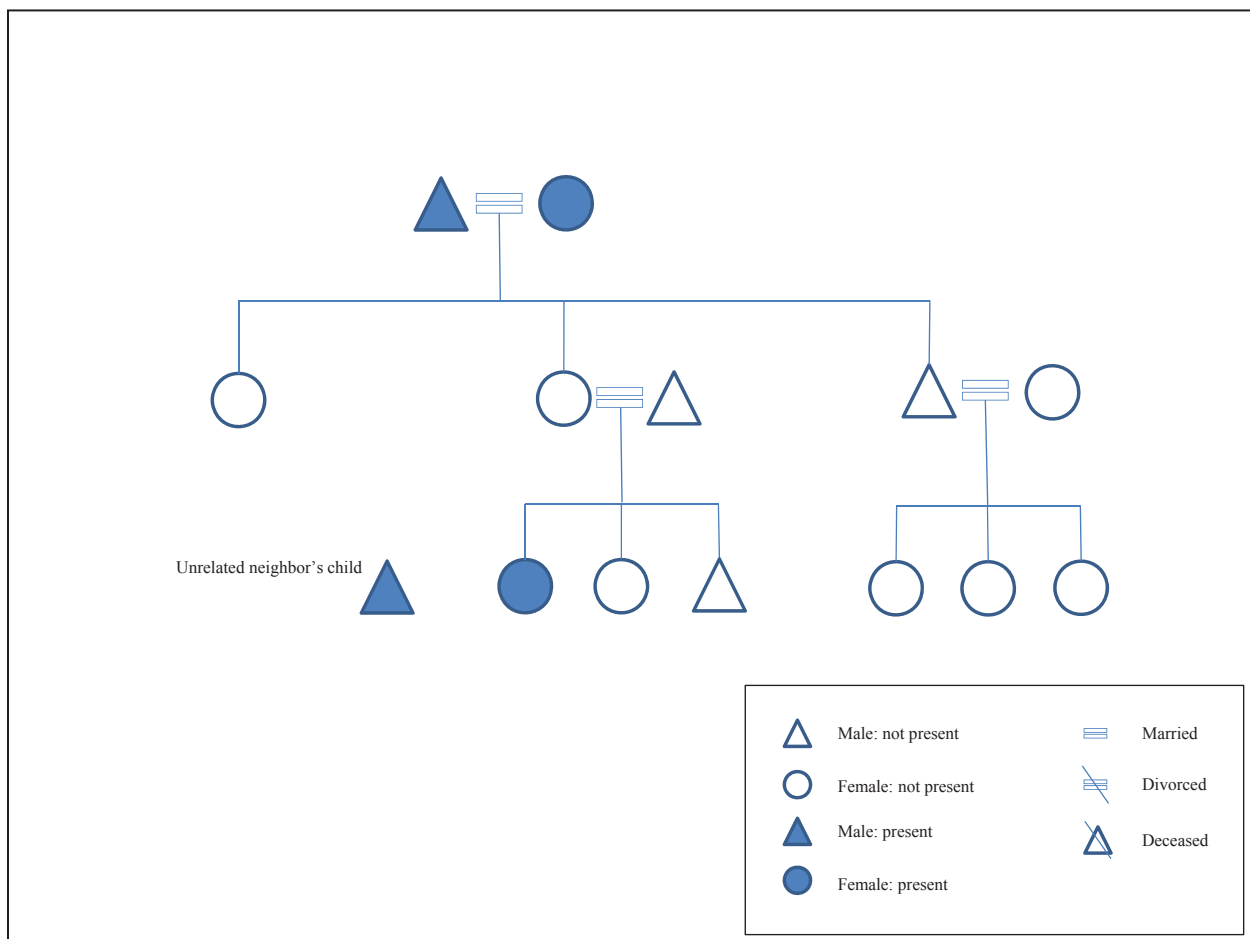


Figure 8-1.—Kinship relations in Case Study A.



Plate 8-2.—Case study A granddaughter and grandmother splitting sockeye salmon.



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Plate 8-3.—Marchioni filleting sockeye salmon with Case study A family.



Plate 8-4.—Case study A family gillnetting for sockeye salmon across from Chignik Lake.



Plate 8-5.-Case study A family gillnetting on bank across from Chignik Lake.



Plate 8-6.—Hutchinson-Scarborough showing off her first split fish.



Plate 8-7.—Split sockeye salmon hanging in Chignik Lake Case Study A family's smokehouse.



Plate 8-8.—Case Study A family vacuum sealing sockeye salmon.

Case Study B: Chignik Lake Family, Early-Run Sockeye Salmon, Set Gillnet, June 2011

This case provides an example of how extended families work together to harvest and process salmon at Chignik Lake and also shows how these activities link families in Chignik Lake, Pilot Point, Eagle River, and Homer. Researchers worked with these families in June 2011.

This case study included 4 households that processed sockeye salmon together on the Chignik River (Figure 8-2). The central household in the group had a large smokehouse behind their house in the community of Chignik Lake, and a skiff and gillnet, which were stored at the water's edge. The 4 households shared the processing space, house, and equipment of the oldest sister and her husband during the 2 weeks they spent in the community preparing their salmon for the winter. The other households were from Pilot Point, Eagle River, and Homer—all related by kinship. The household of the second oldest sister of this central household, who winters in Homer but spends summers in Chignik Lake, was often present at the central household visiting with and assisting her sisters with processing their salmon; however, most of her subsistence salmon harvesting and processing that she did with her two adult daughters (2 from Chignik Lake and 1 from Anchorage) and their families had occurred separately from the other sisters identified in this case study, and most of their fish had already been put up by the time the researchers arrived.

This multi-household group sent three young men in their 20s to do all of the harvesting. The young men were from 2 from different households in Homer: one was a son and the other a grandson to the youngest sister in the group. They were joined by the son of the head of the oldest sister's household (27 years old). The three young men went out multiple times a day, during many different days, for 2 weeks in June 2011. They used a skiff and a gillnet, following the direction of the husband of the central household. The husband said that he no longer needed to harvest fish because he had young men to do it. He also spoke of how slow he had become at splitting fish, even though researchers later observed him splitting each fish in less than a minute.

The family had a system they followed each day they harvested and processed salmon. The 3 young men went out with the gillnet and harvested the sockeye salmon. They brought the whole fish in large tubs on the back of ATVs to the family's house and tossed the fish into a bucket of fresh water to remove some of the scales (Plate 8-9). The youngest sister of the female head of household removed fish from the bucket one at a time and placed the fish on an old metal-topped table draped with a towel to keep the fish from sliding. She removed the head with a strong slice of the knife and then held the fish by the caudal fin and with the knife blade slicing away from her, removed each of the fins (Plate 8-10). A step granddaughter of the youngest sister did not assist in the processing, but she was present and observed while the fish were split and hung.

She handed the remaining carcass to the male head of household who proceeded to split the fish starting from the point where the head was removed, pushing the knife along the backbone down to where the caudal fin begins (Plate 8-11). Then he split the backbone at the point of the caudal fin and pulled the knife along the opposite side of the backbone until the fish was split in half with the caudal fin still attached. The male head of household then tossed the split fish into another large tote behind him.

The youngest of the 3 men took the split fish out of the tote and hung them one-by-one on 2 wooden rods, meat side up. Next, he used a hose to spray the fish with fresh water at close range to remove slime and loose scales (Plate 8-12).

On this hot day, the split fish were left to dry for approximately 20 minutes and then placed in a bucket of brine (16 pint-sized mason jars of salt for 5 gallons of water). After soaking for 1 hour the middle sister of the female head of household removed the fish from the brine and hung them on the poles in the smokehouse, each one approximately one-quarter of an inch apart at its closest point to the neighboring fish. The fish then sat in the smokehouse for 4 days, while the fire was tended 3–5 times a day. They used cottonwood obtained as driftwood from the beach at Chignik Lagoon sand spit, in a central open wood burning fire inside the smokehouse. This family had installed an electric fence around their smokehouse to prevent bears from stealing their fish.

Several of the thicker sockeye salmon, and any Chinook salmon that had been caught incidentally, were cut into fillets rather than split. The fillets were brought into the house where the female head of household and two of her sisters cut strips from the fillets lengthwise and tied string in a double knot around the top edge of the strip. They secured the double knot tightly through the meat, down to the skin about one-quarter of an inch from the top of the strip (Plate 8-13). This ensured the strips would not slide from their string in the smokehouse.

When all of the strips had string attached to them they were placed in a pile and taken out to the smokehouse on a tray. The middle sister of the female head of household then tied the loose ends of the string to the rungs in double knots, which would later need to be cut to release the strip, and let the fish strips hang in the smokehouse. The middle sister was of short stature and required help from researcher Hutchinson-Scarborough to hang the strips (Plate 8-14). The strips hung in the smokehouse for 3 days and then were cut down to a size suitable for half-pint jars with brine at the bottom. The brine ratio was 5 gallons of water with enough salt to float a potato with a nail in it.

Hutchinson-Scarborough and Marchioni did not observe the actual filling of jars of salmon from members of this case study, but they did observe one of the daughters from the second oldest sister as she prepared and filled her jars prior to putting them in a pressure cooker. She cut the strips down to sizes suitable for the jars. She at first used a piece of cardboard she had measured against the height of the half-pint and pint sized jars to see how long the pieces should be. She worked with 3 strips at a time, lining them up next to the piece of cardboard and then making 1 slice through the strips with a fillet knife. The pieces of strips were folded into bunches just wide enough to squeeze into each half-pint and pint sized jar, with a little extra room (Plate 8-15).

Hutchinson-Scarborough and Marchioni arrived back in the central household as the female head of the house placed the second level of pint jars that had just been filled with salmon and lids placed on top in the pressure cooker (Plate 8-16). The female head of household then sat in the kitchen with her other three sisters and they talked and tended to the pot.

Typically, the oldest sister's family harvested and processed all of their fish themselves and sent some of the fish to the sisters in their respective communities. However, this year was special in that they all came to Chignik Lake to get their fish, and they fished and processed their fish together. They had hoped that another sister who lives in Perryville was also going to be able to join them, but she was not able to make it because of her husband's poor health, which also prevented her and her husband from going to their summer camp in Chignik Lagoon as they traditionally have always done. This extended family had harvested a total of 565 sockeye salmon during this period and had obtained a total of 4 subsistence permits. Prior to the start of fishing, each family in the group had indicated to the fishing crew how many fish they wanted for their individual family needs after smoking, canning, and freezing, and these numbers of fish were recorded as amounts harvested on each of the individual family permits.

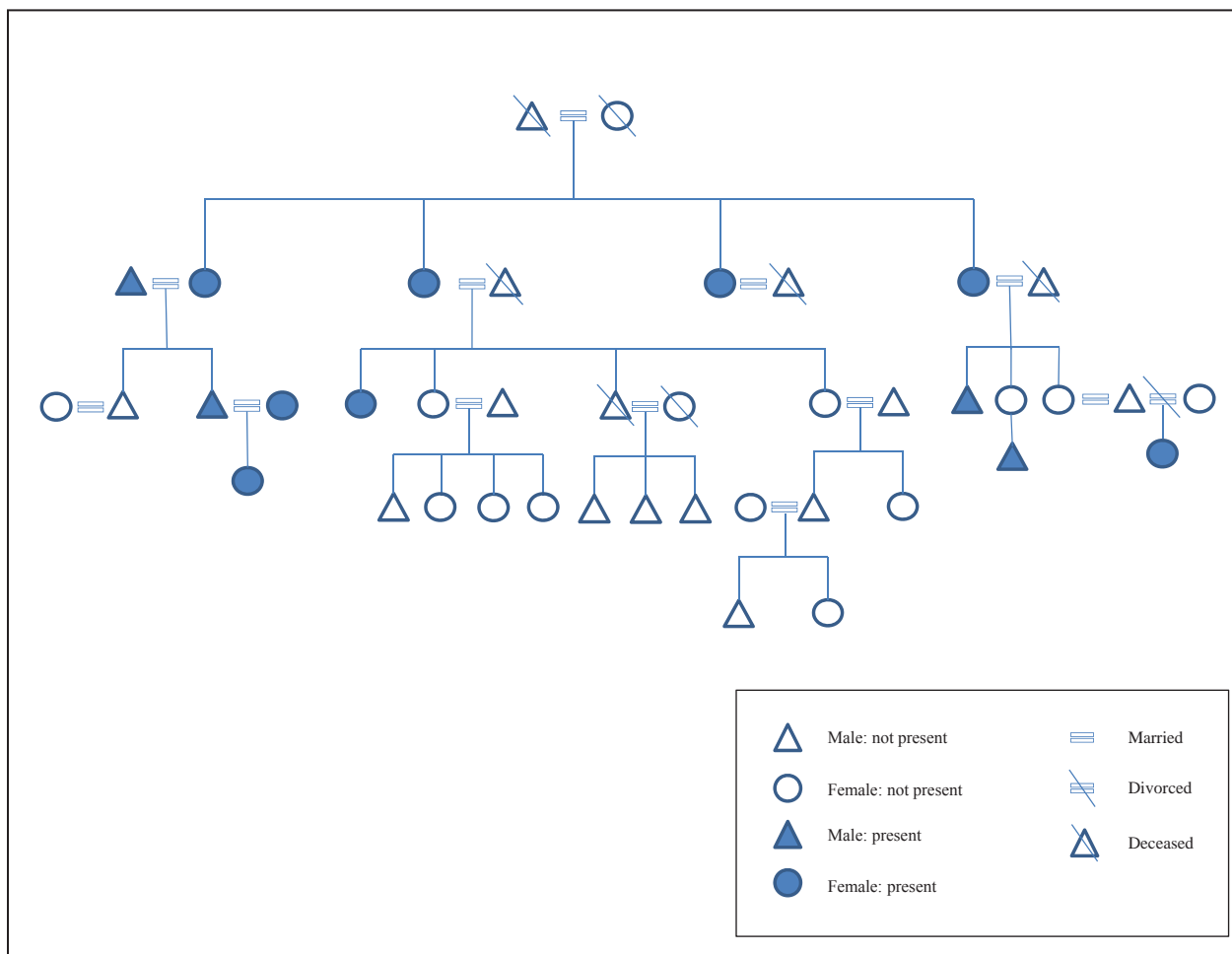


Figure 8-2.—Kinship relations in Case Study B.



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Plate 8-9.-Case Study B family processing fish.



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Plate 8-10.—Case Study B family splitting fish.



Plate 8-11.—Case Study B family splitting fish.



Plate 8-12.—Case Study B family cleaning split fish.



Plate 8-13.—Case Study B family tying string to sockeye salmon strips.



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Plate 8-14.—Case study B family hanging sockeye salmon strips in smokehouse.



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Plate 8-15.—Case Study B family packing sockeye salmon strips in jars.



Plate 8-16.—Case Study B family loading jars of salmon in a pressure cooker.

Case Study C: Chignik Lake Family, Late-Run Sockeye Salmon, Handline–Jig, October 2011

This case example describes the social organization of subsistence fishing and processing for residents of Chignik Lake based on 2 families in fall 2011 (Figure 8-3). This fishing targets spawned-out sockeye salmon via a harvest method that is typically used during the fall and winter months.

Researchers Marchioni and Van Lanen traveled with 4 teenage boys and a teenage girl after school one day in late September on ATVs to Clark River. In the process of getting to Clark River they had to follow an ATV trail that had recently flooded with lake water after heavy rains. The boys, one by one, made their way along the flooded trail as Marchioni and Van Lanen waded. Given the large amount of rain in fall of 2011, the ATV trails all the way to Clark River were flooded and/or muddy. It required a great deal of effort to repeatedly get off the ATVs and push them through mud and water for several miles. The fishing spot was at a bend in the river where it both widened and became shallower, and spawning fish could be observed moving in the river. Once there, they removed fishing gear from their backpacks. They used about 50 ft of white filament twine (approximately 4 mm thick), which had a weighted, 3-barbed hook, called a snagging hook, knotted to one end; the other end was tied through a hole in a wooden spindle. The 50 ft of twine was carefully coiled around the spindle.

The boys each took turns with their gear. Each boy uncoiled all of the twine, held onto the end with the snagging hook, dropped the spindle with the other end of the twine on the ground, and secured the spindle end by standing on it (Plate 8-17). The end of the twine with the snagging hook was held firmly in one hand as each boy loosely held the twine with his other hand to prevent tangling (Plate 8-18). Then each boy swung the hook end in one hand around in large circles until he released the hook portion while maintaining a very light grasp on the twine with his other hand as the hook went flying toward a fish of his choice. Immediately upon contact with the river (regardless of whether it landed on a fish or not) each boy used his whole body to yank the twine taut and drag the hook through the water with the intent of snagging a fish (Plate 8-19). The boys each repeated this process until a fish was snagged. When a fish was snagged, the line was retrieved hand-over-hand until the fish was on the river bank. Each boy would then rinse the fish in the water before he tossed it in a basket on the back of an ATV.

After catching 3 or 4 fish, the boys said they did not like to process the fish near the river because there were many bears nearby. This particular trip was cut short because of dimming light and the amount of time it would take to get back to the community. Researchers realized at this point that the trip was as much for the boys to ride their ATVs as it was to bring back fish (Plate 8-20).

Two days later, 2 other boys brought Marchioni to Clark River to harvest spawned-out salmon. The area was still flooded, and the trip was just as difficult as the previous one. However this trip included a teenage boy with more fishing experience. Five fish were caught fairly quickly, all amid the presence of a very large grizzly sow and her 2 cubs. The boys said she would not bother the group as long as they kept their distance. They fished at a different location than the previous trip, at another bend in the river, where it became wide and shallow; however, here they had to climb down the side of a cliff to get to the river bank. This did not provide for much bear protection because they were standing on the river bank with the bears and they had a difficult climb back up to the ATVs. At one point, when the bears crossed the river and were fishing approximately 100 ft from them on the same side of the river, Marchioni expressed concerns about their safety and requested that they head back. The boys laughed at her but respected her wishes. They took their 7 fish in a tote on an ATV back through the muddy, flooded tracks. Once back, the boys divided the salmon between them, 1 boy taking 3 and the other taking 4 fish home. Marchioni went to the house with the boy who took the 4 fish. The boy parked his ATV in front of the house and grabbed 2 fish, and Marchioni grabbed the other 2. They carried the fish to a hose around the side of the house where they sprayed off the dirt and tried to remove some of the scales. He then split and cleaned the fish and told Marchioni he planned to give them to his family to cook.

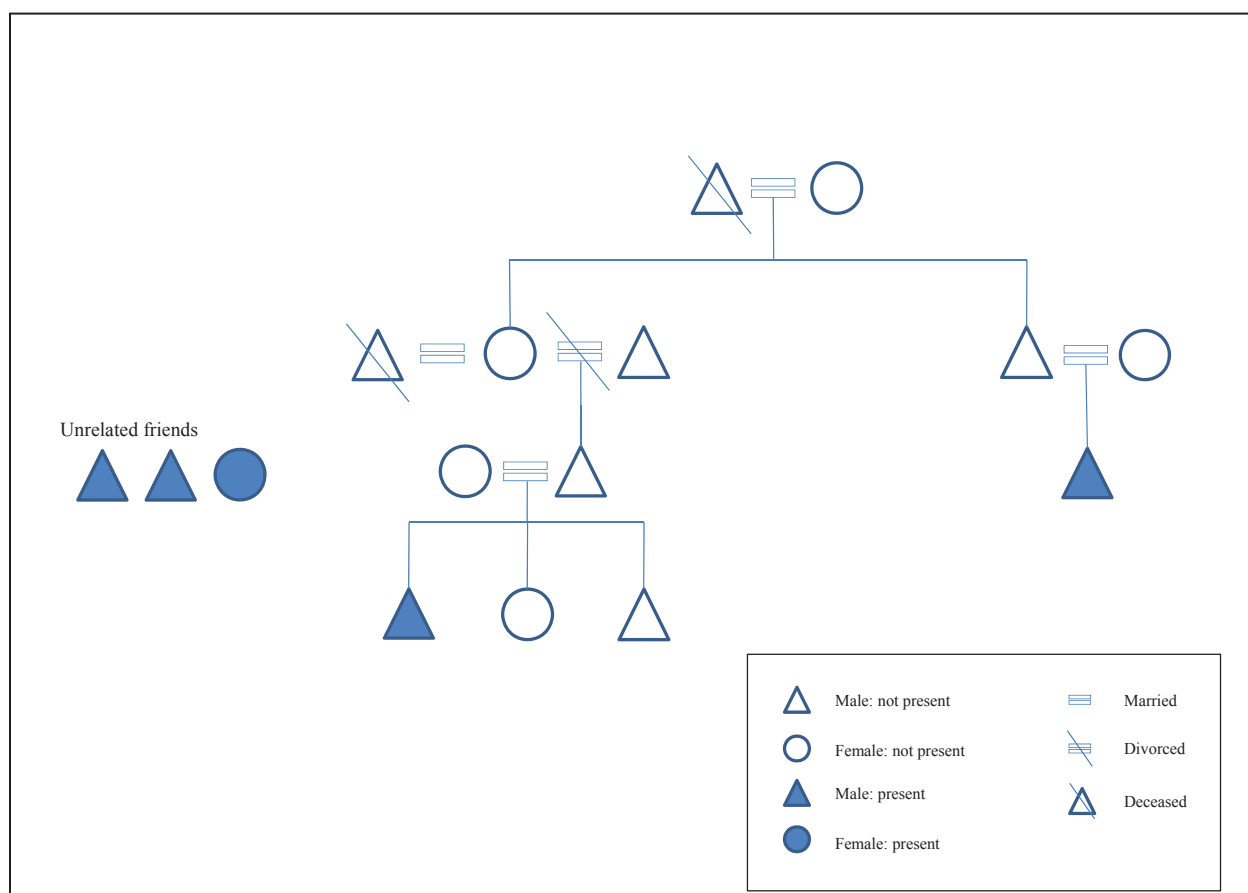


Figure 8-3.—Kinship relations in Case Study C.



Plate 8-17.—Case study C teenage boy hook and line jigging for spawned-out sockeye salmon.



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Plate 8-18.—Case Study C teenage boy stretching out line for hook and line jigging.



Plate 8-19.—Case Study C teenage boy trying to snag a sockeye salmon with hook and line.



Plate 8-20. –Case Study C teenagers riding their ATVs to Clark River to snag sockeye salmon.

Case Study D: Chignik Lake Family, Late-Run Sockeye Salmon, Beach Seine, October 2012

Researchers Hutchinson-Scarborough and Marchioni met this family at Chignik Lake beach, which is within walking distance from the community of Chignik Lake. The family included the father (head of household) who was 33 years old, his 16-year-old son, his 10-year-old son, his 19-year-old neighbor, and their small dog (Figure 8-4). They took 3 ATVs down to the beach from their respective houses, with the father and the youngest son on one ATV, and the older boys riding separate ATVs. They removed the tarp that had been loosely secured to the top of their skiff. The seine net was in the skiff, along with a shotgun and some buoys. The family and the researchers loaded into the skiff. The father drove with the dog on his lap, the oldest son sat directly to his left with the youngest son in front of him. Hutchinson-Scarborough and Marchioni sat on the right-hand side, one in front of the other, and the nephew sat in the bow (Plate 8-21).

When they got to Hatchery Beach (Figure 6-14), the nephew grabbed the bow line and jumped out of the boat. He held the rope while the oldest son grabbed one end of the net and jumped out of the boat. The other end of the net was secured to a cleat on the inside of the skiff. Everyone unloaded from the boat except the dog and the father, who grabbed the net and let it out carefully as he drove the skiff upriver away from the beach. The oldest son securely grabbed the net's line and put his hands at his shoulder for more security and leverage. The nephew stood closely behind the oldest son and grabbed the line with both hands and rested it across his shoulders and the back of his neck. Marchioni did the same a foot back from the nephew.

They took steps sideways down the beach, feeling the weight of the net increase as salmon accumulated behind it. As they walked slowly down the beach with the current, the father also pulled the far end of the net slowly downstream with the skiff (Plate 8-22).

As the boat opposite the boys and Marchioni carried the 2 ends of the net downstream, the net increasingly sagged in the middle because it was filling with fish. After the shore and the skiff participants pulled the ends of the net approximately 200 ft downriver, a large bow in the net occurred.

Eventually, when the father figured he had enough salmon trapped by the net, he steered the boat toward the crew members on shore who continued to hold their end of the net. Once the skiff was a few feet from shore, the father jumped out with the other end of the net, and he and the nephew secured that end to a tree (Plate 8-23). They then joined the oldest son and Marchioni, and the 4 of them secured the other end of the net to another tree about 30 ft from the first tree (Plate 8-24).

The boys and Marchioni waded into the lake behind the bulging portion of net that remained in the water and began picking the fish that had been captured by the seine. Bright fish were thrown back into the water to spawn. Red fish were kept and thrown into the boat, one at a time. There was a rhythm and placement for each person. After Marchioni threw a fish and hit the father, the reasoning for the rhythm and placement became clear. Each individual placed himself a couple of feet away from the person beside him and was careful to look before throwing a fish back into the water, out of the net, or into the boat (Plate 8-25). When the father determined they had caught enough sockeye salmon, approximately 250, the rest were thrown back into the river regardless of their condition. His assessment of "enough" was based on based on how full the boat looked.

With the fishing complete, the father got into the skiff and began pulling the net through the water and shaking it to clean it off on its way into the boat. The oldest boy and the nephew were in the water also shaking the net and throwing back any extraneous fish as it went into the boat. The father continually folded the net over itself as he placed it in the bow of the boat. When the entirety of the net was in the boat everyone gathered in the boat around the large mass of fish and headed back to the community of Chignik Lake. Upon arrival, fish were quickly thrown by the oldest son, the nephew, and Marchioni from the boat into the open totes that had been secured to the back of the ATVs (Plate 8-26). Two buckets were then filled with water and splashed into the boat to clean the surfaces of fish slime and scales, and the drain plugs were removed from the stern of the boat to allow the water to empty.

Due to how late they returned from fishing, the father decided the fish would be put in a shed for the night, and he would process them early the next morning. Marchioni and Hutchinson-Scarbrough had to leave early on a flight the next morning, so they missed the family's processing.

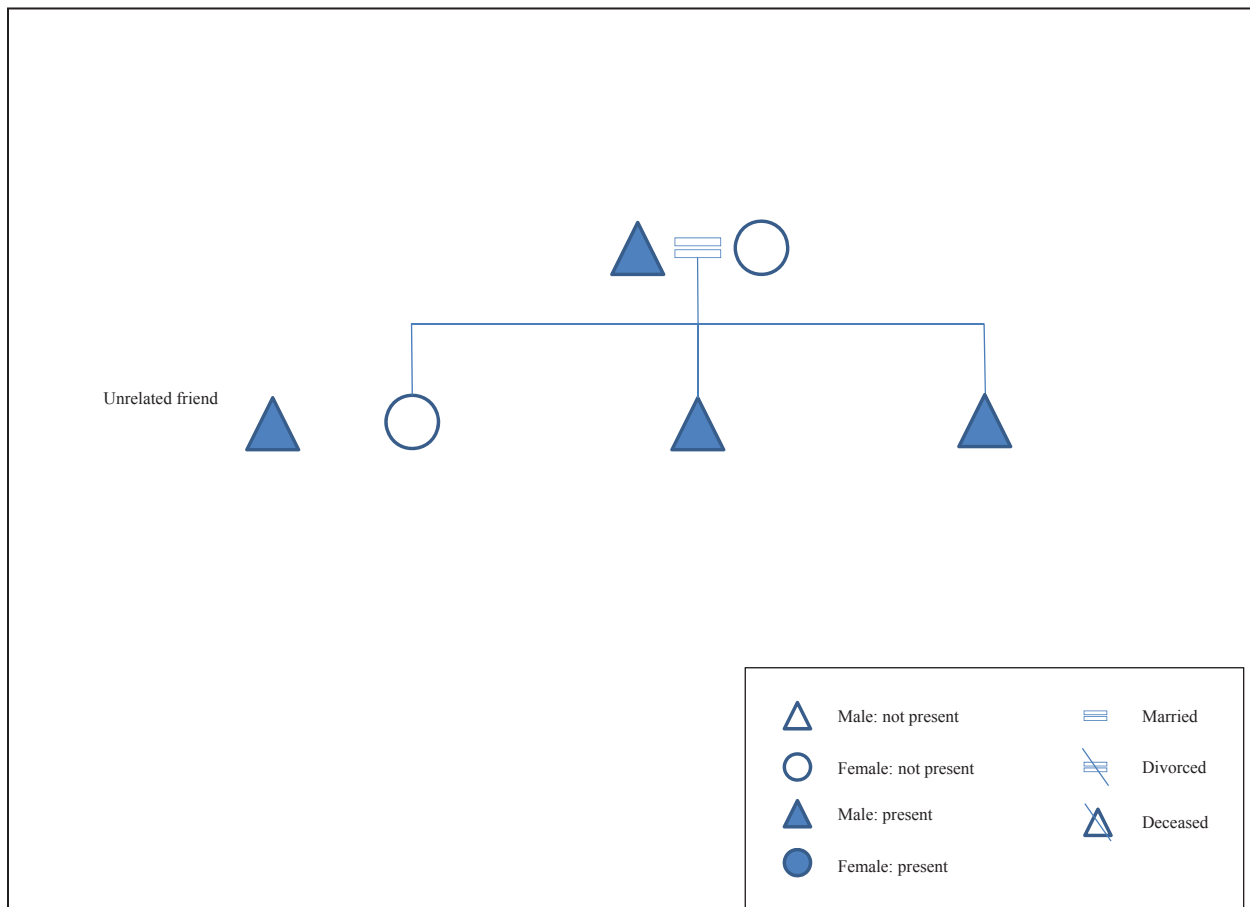


Figure 8-4.—Kinship relations in Case Study D.



Plate 8-21.—Case Study D family traveling to Hatchery Beach.



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Plate 8-22.-Case Study D family fishing at Hatchery Beach.



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Plate 8-23.—Case Study D pulling beach seine to shore.



Plate 8-24.—Case study D family tying the beach seine off to shore.



Plate 8-25.—Case Study D family picking sockeye salmon from the beach seine.



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Plate 8-26.—Case Study D family loading sockeye salmon into their ATV.

Case Study E: Chignik Lagoon Family, Early-Run Sockeye Salmon, Commercial Purse Seine, May 2012

It is common in all 4 study communities for people to use commercial fishing gear to obtain subsistence fish. This is particularly true in the community of Chignik Lagoon, which has the highest number of registered fishing vessels in the CMA. In 2012, 90 total vessels registered in the CMA, 48 vessels (47 purse seine vessels) were registered to seasonal or year-around residents of Chignik Lagoon; with approximately 30 of which (all purse seine vessels) were home-ported in Chignik Lagoon.¹In June of 2012 Hutchinson-Scarborough and Marchioni conducted participant observation on a commercial purse seiner in Chignik Lagoon while they did their subsistence harvesting. In the Chignik Management Area, a commercial salmon license holder may subsistence fish at any time except during the period 12 hours before a commercial salmon fishing period and the 12 hours following the closure of a commercial salmon fishing period. Many local residents of the communities within the CMA commercial fish for salmon as well as obtain salmon for subsistence. Many of these families prefer to put away subsistence salmon before the first commercial opening of the year, so the subsistence fish is processed before they get busy with commercial fishing. Also this time of the year is when many families will smoke and kipper their subsistence salmon. It is preferable to do this before it gets too warm and the blow flies hatch and potentially ruin their smoking fish by laying eggs in the flesh. Hutchinson-Scarborough and Marchioni went fishing with one family in early June before the commercial fishery was opened. This family took 2 boats and made 2 sets (each) to meet their household's subsistence needs for the year. Prior to fishing, the family had an idea, based on previous uses and needs, how many fish that they needed, which was around 500 salmon; however they had two friends also wanting salmon, so they increased their harvest goal. A crew of 10 was aboard the first boat owned by the father. This crew consisted of the father, his wife and daughter, his daughter's husband and their child, another daughter's husband, 2 friends, and researchers Hutchinson-Scarborough and Marchioni (Figure 8-5). The son owned and ran the second boat, along with his wife and 3 daughters.

There are no harbor or mooring buoys to secure boats in Chignik Lagoon. When a boat comes in the lagoon, its captain finds a spot to set anchor, and those going ashore go by skiff. This process must be carefully timed because once the tide goes out, the boat lies on its side on the exposed tidal flats and is unable to be used until it is floated again by the next high tide (Plate 8-27).

The 2 families waited until high tide and boarded their boats using a skiff. Once the skiffman pulled up to the boat, the father/captain got on board first and went directly to the wheelhouse and turned the engine on. The skiffman then helped everyone else board one at a time. Once everyone was on board, the captain drove toward his first choice for a fishing spot. His daughter, who had crewed on his boat the year before, suited up in her rain gear and began preparing the boat for fishing. Also crewing for this day was the daughter's husband. The other daughter's husband served as the skiffman. The skiffman brings one end of the net out using a skiff until it makes a significant curve (Plate 8-28). Eventually the skiffman returns to the end of the boat by skiff, and the purse line is run through the rings at the bottom of the net, creating the purse (Plate 8-29). Fish are trapped in the purse seine, hoisted up by a hydraulic crane, and the net is placed aboard with the fish.

The first set of the seine net produced a catch of approximately 35 salmon. A second set of the net produced a catch of approximately 250 salmon (Plate 8-30). The son's boat followed the father's boat and made 2 sets with very similar results. The catch from the first set was poor, but the second load was much better.

The father and mother stayed in the wheelhouse of their boat with their granddaughter and 2 guests. Hutchinson-Scarborough and Marchioni both stayed just outside the wheelhouse on the boat's upper level, observing and taking photos.

Once it was determined that both boats had harvested enough sockeye salmon they returned to Chignik Lagoon for the day. Both boats were brought to the closest point to shore that was deep enough to drop anchor. People and fish were then transferred to shore (directly in front of the father and mother's house)

1. Commercial Fisheries Entry Commission. n.d. Vessel Database. Juneau. Accessed April 2016. <https://www.cfec.state.ak.us/plook/#vessels>

by skiff. Two of the men headed immediately for a garage by the house where they got metal tables, stools, and buckets and brought them down toward the water where they set up filleting, splitting, and scrubbing stations. The other family participants threw the fish into totes on the beach and carried them up to the scrubbing and filleting/splitting stations. The mother (female head of household) operated the scrubbing stations. The daughter, who worked on the fishing boat, operated the fillet station. Other family members, a daughter and two grandsons, not present during fishing joined the family on the beach and helped clean and split the fish. Hutchinson-Scarborough worked at the scrubbing station, and Marchioni worked at the fillet station (Plate 8-31).

It took approximately 5 hours to process 600 fish. This did not include vacuum sealing or hanging in the smokehouse. Scrubbing occurred first in large, individual buckets with the mother (Plate 8-32), daughter, and Hutchinson-Scarborough sitting on wooden stools and scrubbing slime and scales off of fish with large, firm bristled brushes in large, individual buckets of water.

The cleaned fish were thrown into totes, and once a tote was filled it was carried over to a large garage owned by the family. The cleaning and splitting lasted until 11:30 p.m., so the families decided to vacuum seal and hang all of the fish the following day. Marchioni and Hutchinson-Scarborough missed the processing because they were scheduled to conduct participant observation with another family when it occurred. A total of 5 permits were obtained by this family and friend. The total salmon harvest of 600 fish recorded on each permit was estimated based on the amount of whole fish or final product (smoked salmon filets) each family took home for their own family use or shared with others.

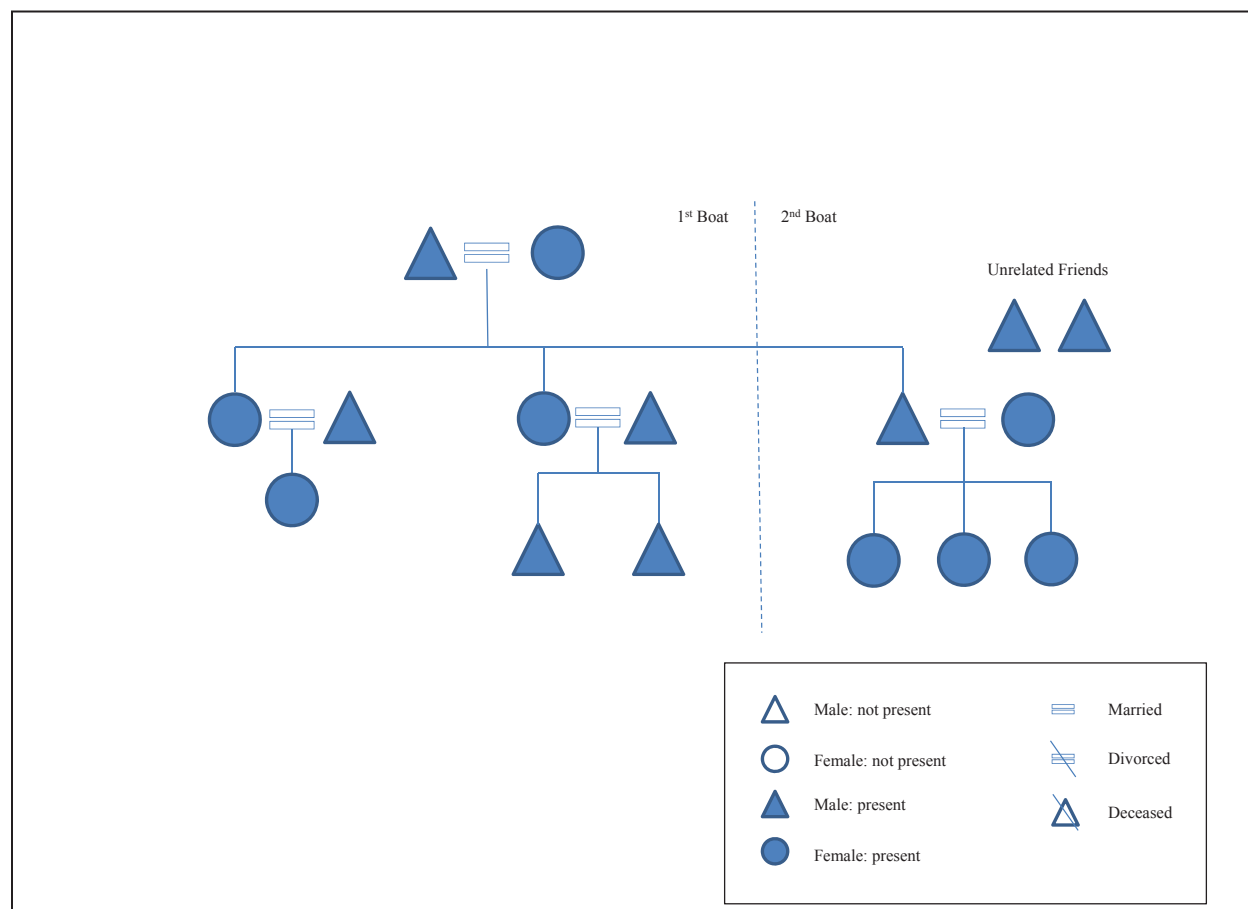


Figure 8-5.—Kinship relations in Case Study E.



Plate 8-27.—Purse seine boats beached at low tide.



Plate 8-28.—Skiffman taking out one end of the seine net.



Plate 8-29.—Seining net in a full purse.



Plate 8-30.—Crew unloading sockeye salmon from the net.



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Plate 8-31.—Marchioni filleting sockeye salmon for the Chignik Lagoon families.



Plate 8-32.—Female head of Chignik Lagoon household scrubbing scales and slime off sockeye salmon.

Case Study F: Chignik Lagoon Family, Early-Run Sockeye Salmon, Commercial Purse Seine, May 2012

This family went out fishing at the same time as the family described in Case Study E, so researchers were unable to conduct participant observation onboard Case Study F's vessel. Researchers learned that they took 1 boat out, made 2 sets with their seine and harvested 350 sockeye salmon. The fish were already on shore in totes when Hutchinson-Scarbrough and Marchioni arrived, and stations were set up for scrubbing and filleting and splitting the fish. One tall wooden table was shared by 3 men to fillet and split the fish. Two large black buckets filled with fresh water were set up for scrubbing scales and slime off the fish. The women stood around the buckets and scrubbed the fish with long, stiff-bristled brushes (Plate 8-33).

The heads of the primary household were the mother and father of 2 sons and 2 daughters who were all present to help with the processing. The female head of household was not present because she was home preparing sandwiches for the crew, getting supplies ready for smoking, jarring and bagging the salmon, and being on standby for childcare. The head male was orchestrating the process. The two daughters each had one child under the age of 10 present. The 2 sons each had their wives present, and one couple had a daughter under 10 years old with them. The 3 children were all involved in the process by carrying fish from the women at the cleaning stations to the men at the fillet stations (Plate 8-34). There were 2 other men present. One was a male deckhand on one of the son's boats and had no familial relation to the family. The other man was a resident of Chignik Lake and a skiffman for the father's (head of household) boat (Figure 54). There was a very clear gender distinction throughout the processing: women never filleted and men never scrubbed in this case study.

Once the fish were scrubbed they were thrown in a clean tote. When the tote was full, one of the crewmen came over and grabbed the tote to bring it to the filleting–splitting table. That same crewman retrieved fish from the tote and placed them in front of each of the men at the fillet station. The father never pulled fish from the tote—fish were always placed in front of him to fillet. The same basically applied to the sons; however, if one of them ran out of fish they would retrieve more fish for everyone. Once the fish were split or filleted they were placed in another clean tote, and when the tote was full it was placed on the back of an ATV and driven up to the processing shed by one of the crew who was not family.

In the processing shed, the filleted fish were vacuum sealed with a commercial grade vacuum sealer. The split fish were placed in a salt brine for 1.5 hours and then hung in a large smokehouse located behind the processing shed. Hutchinson-Scarbrough and Marchioni aided in filling part of the smokehouse, but it became full quickly because there were still fish hanging from a previous harvest a couple of days earlier. Four subsistence permits were held by this family, with a total of 350 salmon harvested; 1/3 of the total was recorded on each of three permits, and the 4th permit did not record any harvests.

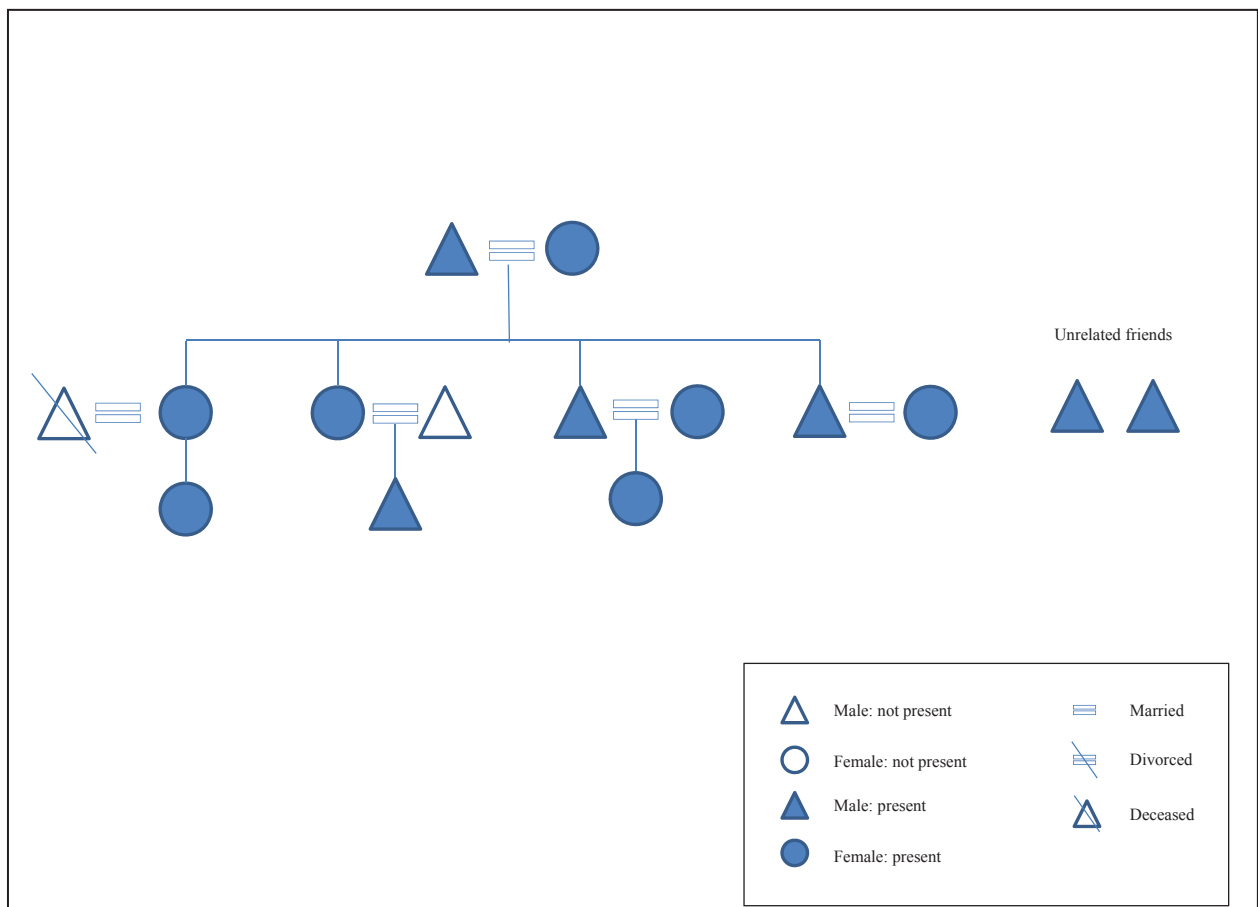


Figure 8-6.—Kinship relations in Case Study F.

Case Study G: Chignik Lagoon Family, Early-Run Sockeye Salmon, Drift Gillnet, May 2012

This case study consisted of 2 families—1 family from Chignik Lagoon and 1 from Chignik Lake (Figure 8-7). The day began with Hutchinson-Scarbrough, Marchioni, and Division of Subsistence Director Hazel Nelson leaving Chignik Lagoon in a skiff with a male resident of the community (Plate 8-35). The plan was to meet the man's friends from Chignik Lake on the beach across from Chignik Lake to harvest sockeye salmon. When they arrived at Chignik Lake, they heard from the Chignik Lake friends (a man and his son in a separate skiff) that fishing was slow directly across from the community. They tried anyway, but eventually decided to change locations and figured the best place would be right in front of the Chignik River fish weir.

The 2 skiffs went below the weir and set a gillnet out between the 2 of them. One skiff carried the net away from the other skiff parallel to the weir, and then, after traveling for several hundred feet, turned away from the weir and back toward the other skiff. Many fish were caught during this process. Since each boat carried a different end of the net, the people in each boat picked their half of the net. The Chignik Lake group took what they wanted and then the Chignik Lagoon crew pulled in the rest of the net and left it on the bottom of the boat to pick the remaining fish when they arrived at the boat owner's household in Chignik Lagoon. Both the Chignik Lagoon and the Chignik Lake family took home about 80 sockeye salmon. Both of the men held a subsistence permit, and the amount of salmon each family took was recorded on their respective permits.

The researchers went back to Chignik Lagoon with the elder's son, and the Chignik Lake father and son returned to their home. The elder mother of the Chignik Lagoon man spends summers in Chignik Lagoon with her son. She came out and split most of the fish with her son and the researchers (Plate 8-36). The fish were split in half with the tail remaining intact for hanging in the smokehouse (see Plate 8-1). The 15 fish that were not split and hung in the smokehouse were filleted and vacuum sealed as full fillets for freezing. The son pulled the skiff on shore with his truck and then pulled it to the back of his house. The fish that were still in the net on the floor of the boat were thrown one by one into totes on the ground by Hutchinson-Scarbrough and Marchioni.

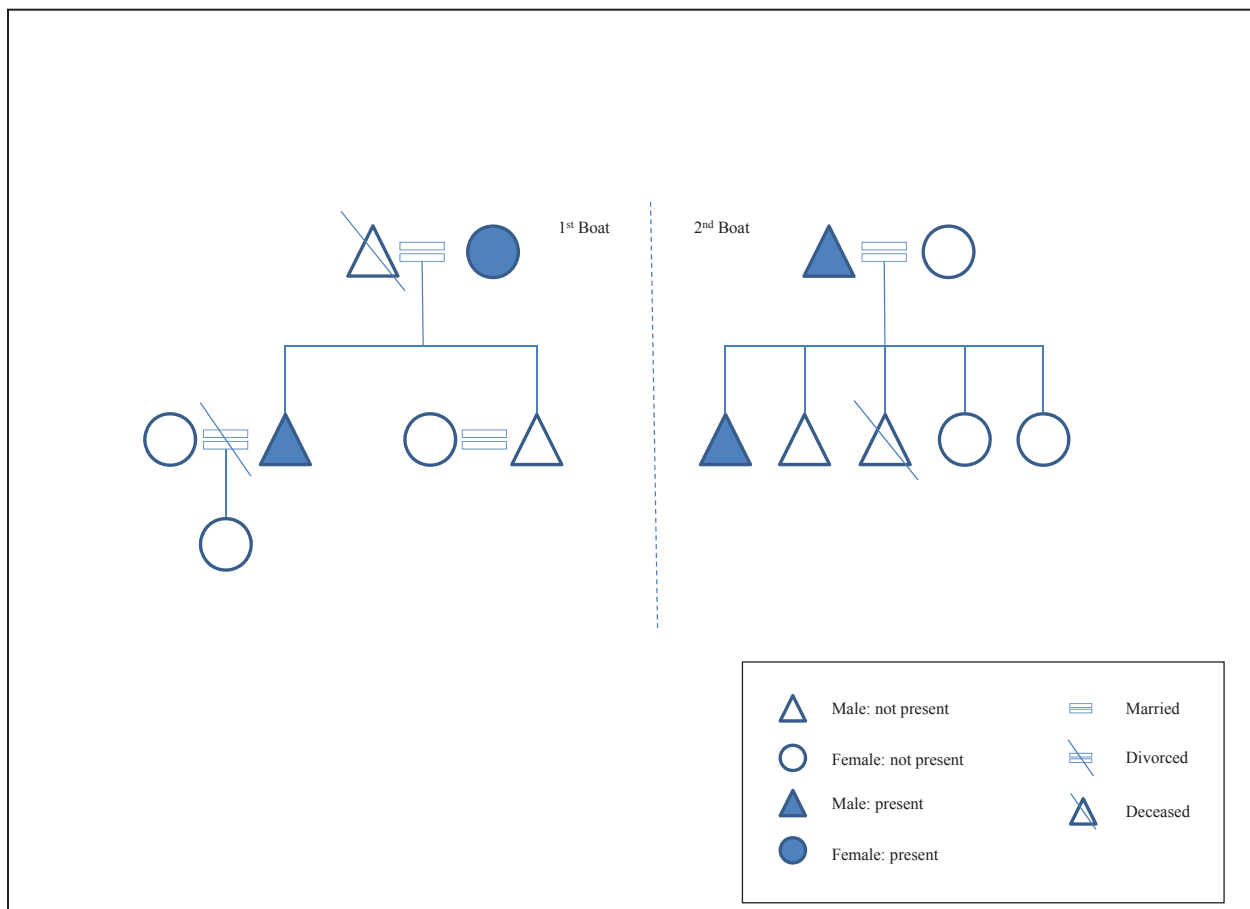


Figure 8-7.—Kinship relations in Case Study G.



Plate 8-33.—Grandchildren playing with fish heads, guts, and scraps.



Plate 8-34.—Fillet and scrubbing stations on the beach in Chignik Lagoon.



Plate 8-35.—Marchioni and Alaska Department of Fish and Game Division of Subsistence Director Hazel Nelson pulling in one end of the gillnet.



Plate 8-36.—Marchioni, Director Hazel Nelson, and Chignik Lagoon resident splitting sockeye salmon.

Case Study H: Perryville Family, Chum and Coho Salmon, Set Gillnet, May 2012

This case study involved individuals from 3 distinct households, 2 from Perryville, and a non-related former Perryville resident from Manokotak. Researchers accompanied the head of 1 household, his 2 grandchildren from another household, and a friend who had been born and raised in Perryville but was now the head of his own household in Anchorage (Figure 8-8). They headed out to Humpback Bay in the late morning. The owner of the boat is a high-subsistence harvester and had his own skiff for harvesting subsistence salmon. His 2 grandchildren were ages 4 and 10, he was roughly late 60's in age, and his friend, who came along to help, was in his mid 50s. After an hour-long skiff ride, they arrived at the opening of a stream which he called "portage" because it leads to Ivanof Bay if someone is traveling by foot. The spot had lots of driftwood high on the beach. Everyone got out and saw some pink salmon but did not fish for them. The boat owner said that it used to support a large pink salmon run, but the pink salmon stopped coming there, and now there was only the occasional coho salmon.

They went on to Humpback Bay, where there is a creek that floods at high tide, and the 2 men were able to get the skiff about 100 yd into the creek. The elder pointed out a small cabin on the west side of Humpback Bay, just above the creek. He said his father built the cabin to be used as a fishing and hunting camp. The family has decided to share it, and it is currently used primarily as a structure to sleep in while hunting.

Hutchinson-Scarbrough, Marchioni, the 2 grandchildren, and the friend got out of the boat and unloaded the net. They all remained on shore as the elder ran the net out with his skiff. There were many visible coho salmon that had come in with the tide. The children threw rocks to scare the fish into the net. After about 20 minutes, the elder came around in the skiff close to the net end on the shore and half pursed (half closed) the net capturing the caught fish inside the net. (Plate 8-37), Then Hutchinson-Scarbrough, Marchioni, and the friend pulled the net into the boat (Plate 8-38). They caught approximately 20 coho salmon, some bright, some turning red, and a few chum salmon (Plate 8-39). The elder man suggested waiting a while to fish again because they had disturbed the other coho salmon. He then decided everyone should return home because it was getting late. When they arrived in the cove near Perryville, they secured the skiff and all of the adults began filleting and splitting salmon in the grass on the shore (Plate 8-40). The fish were then rinsed in the water and thrown in totes on the back of 2 ATVs, and everyone returned to the village with the fish. Hutchinson-Scarbrough and Marchioni did not observe how the fish were processed, but were told that some would be filleted and vacuum sealed and then frozen, and the rest would be jarred. One permit was held by the owner of the skiff, and all the salmon harvested were recorded on his permit.

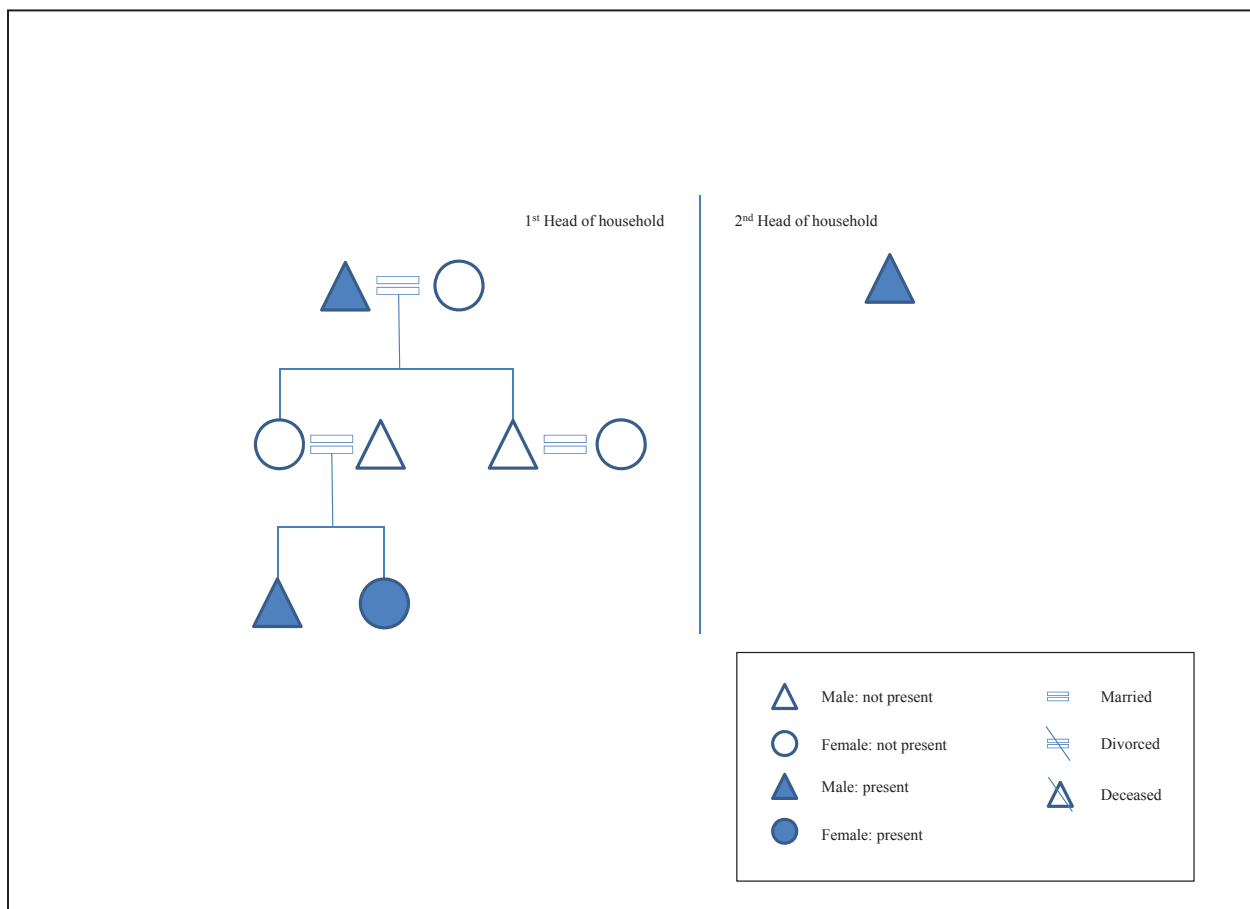


Figure 8-8.—Kinship relations in Case Study H.



Plate 8-37.—Perryville residents using their gillnet to purse salmon.



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Plate 8-38.—Preparing to pull the gillnet with salmon onboard the skiff.



Plate 8-39. –Perryville residents pulling the gillnet with salmon onboard the skiff.



Plate 8-40.—Perryville elder splitting salmon in the grass.

9. DISCUSSION

This section provides an analysis of the data collected during this project through participant observation, case studies, key respondent interviews, and household surveys. It addresses factors that shape long-term trends in subsistence salmon harvesting techniques, location selection, usage, and participation in subsistence salmon fishing. Many factors have affected the subsistence salmon harvesting practices of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville residents over time, and this section will focus on the 7 factors deemed most important by interviewees. The transmission of traditional knowledge across generations, the shift away from using fish camps, the lasting effects of the commercial fishing cooperative, the limited entry system, the changing amount of salmon needed in a year, the fluctuating environmental patterns, and the effects of other fisheries and state management decisions are all suggested reasons for long-term changes in subsistence activities. Although there are many other factors in each community that affect subsistence activities and use, researchers decided to focus on those that were both mentioned most frequently during fieldwork and that addressed the objectives of this study.

TRADITIONAL KNOWLEDGE

You know how I learned? By watching! And then when I was able to use a knife, I could only cut heads. And a little at a time you learn to do different parts. I learned from my parents, both of them. For as long as I can remember we always took part in some kind of food gathering. It's fun to teach them [children]. If they say, "Mom do we have any 'kippered fish'?"

"The next time I make it," I tell them, "[you] had better be there." It's fun to teach them so they will know. You know, there are certain things we do a certain way and it is good to pass that [information] on. (Chignik Lake resident)

Elders from all 4 study communities talked of the context in which they learned their subsistence salmon fishing practices, how important it was for them to learn these skills, and the significance of being taught by elders. Bonds are formed during the learning process between children and adults, and these bonds were witnessed by Hutchinson-Scarborough and Marchioni during harvesting and processing activities in 2011 and 2012. Interviewees recalled their first experiences picking fish from a net or handing strips to an adult to be hung in a smokehouse. Some of the memories were thought of fondly and some not so fondly, but each individual was able to recall at least one very early memory of subsistence fishing with family. They remembered who taught them to set a net, pick a net, pick a location, split fish, and smoke fish. Every interviewee expressed a deep appreciation for his or her knowledge of subsistence harvesting and processing practices.

The majority of interviewees in each of the 4 communities also revealed a concern that the youth were not interested in subsistence activities.

In Perryville our elders taught us how to survive. Camping out in bad storms like this. We spent a lot of times in the bay trapping with the elders, and we would go with quite a few skiffs and would stock up on meat, crabs, clams, and then we would get back to the village and share it with the elders. Television is the problem with the youth today. Lazy. (Perryville resident)

There were 5 reasons for a decrease in youth participation in subsistence activities that were mentioned by interviewees in each of the 4 communities. The first reason was that media such as television, phones, and computers have promoted "laziness" with youth. Second was that the availability of bikes, ATVs, and snowmachines encourages youth to be outside but distracts them from doing any actual work (including subsistence activities) within their community. Third was that interviewees in all communities spoke of how youth have not developed a taste for subsistence foods and that foods shipped to the communities from large

box stores are more appealing to them. The fourth reason was that youth no longer appreciate subsistence foods and therefore do not wish to participate. The fifth reason was alcohol abuse and the effects it has on not only the youth but on the previous generation—their parents.

Media, machines, and a lack of appreciation have been seen across the state of Alaska as common causes for why rural youth are losing interest in traditional subsistence activities. Katie J. Moerlein and Courtney Carothers (2012), in a study exploring the effects of climactic and social effects on the subsistence practices of Noatak and Selawik residents, found that changing social and economic conditions have made it difficult for youth to develop hunting and fishing skill sets comparable to those of previous generations. Moerlein and Carother's (2012) participants noted a general disconnect between the younger generation and subsistence practices. This trend is characteristic of many northern subsistence-based cultures (Condon et al. 1995). Moerlein and Carothers (2012) discussed how Noatak and Selawik elders noted that access to a much greater number of conveniences, such as cell phones, fast transportation, plumbing in the house, and store-bought foods, has resulted in youth expressing a declining interest in the harvest of local resources. Marchioni and Hutchinson-Scarborough found similar attitudes with interview participants in Chignik Lake, Chignik Bay, Chignik Lagoon, and Perryville where many interviewees felt that the "youth have not learned how to work hard and perform activities that were basic necessities for the previous generation such as chopping wood, hauling water, and feeding dogs" (Moerlein and Carothers 2012). People in rural communities are consuming more food available from large box stores that ship to rural areas for reasonable prices, and this is causing an increased separation between local residents and their environment (Moerlein and Carothers 2012). Furthermore, it was found by Moerlein and Carothers (2012), as well as by Hutchinson-Scarborough and Marchioni in this study, that school districts in Alaska are requiring more travel for sports, testing, and vocational training opportunities, which makes it difficult for youth to be present during subsistence harvesting and processing activities.

Alcohol and its effects on both present day youth and their parents was also mentioned as a factor in each of the 4 study communities as a reason for decreased participation in subsistence activities. Seale et al. (2006) conducted a psychological study with Inupiat people in a community in Alaska that involved discussion of the effects of alcohol on their daily lives and culture. Many individuals in the focus groups identified "not teaching subsistence customs to children" as a significant alcohol-related problem (Seale et al. 2006:13).

Young people, their parents are not teaching them how to hunt and fish and put away their fish like I was taught and [I] taught my kids. I blame drinking for that. Drinking is a bad thing, it makes me so sad. I hear the bikes going by my house all hours of the night really fast. It scares me. I know they have been drinking. Many of the kid's parents have not taught their children how to fish or smoke fish because they would rather party. So many babies are being born and being raised with single mothers or grandparents. It is very sad. They also do not listen to me anyway. I do not speak unless they ask me. When I was young, I listened to my elders. I love them [all the children] just the same. (Perryville resident)

It is important to mention that although the majority of interviewees discussed a decreased interest and practice in subsistence activities by youth, the children of many families with whom Hutchinson-Scarborough and Marchioni fished participated alongside their parents and grandparents. Strong beliefs towards subsistence fishing and the importance of passing knowledge of subsistence practices onto future generations were very much present with select families in each of the study communities. However, although some youth from particular families still participate, it is clear that the majority of elders would like to see more youth showing interest in traditional subsistence practices.

FISH CAMPS

The fish camps were built around 1960. We used to go to the fish camp and make our winter supply and process it for the winter. The fish and the meat. Now people get their red fish here [the community of Chignik Lake]. (Chignik Lake resident)

In 1990, researcher Hutchinson-Scarborough traveled to the communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville for the first time to conduct ethnographic research on subsistence salmon harvesting and processing activities. She has vivid memories of people from Chignik Lake and Perryville hanging salmon in subsistence smokehouses, as well as canning and salting at camps across Chignik Lagoon from the community named after it. When Hutchinson-Scarborough returned to the communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville during the summer months of 2007, she noticed that the majority of these camps had been vacant for some time. One objective of this study was to address the discontinued use of these fish camps across the lagoon from Chignik Lagoon.

Initially Hutchinson-Scarborough hypothesized that the camps stopped being frequented after the Chignik Cooperative was created and many commercial permit holders were forced out of the commercial salmon fishery. During their research, however, Hutchinson-Scarborough and Marchioni found that it was a combination of several factors, the most notable being the closure of the Columbia Ward Fisheries Company (CWF); particularly the general supply and food store at the facility situated on the north side of Chignik Lagoon, directly across from the community of Chignik Lagoon. CWF was easily accessible by Chignik Lagoon and Chignik Bay residents but not convenient for Chignik Lake and Perryville Commercial fishers from Chignik Lake and Perryville built houses next to CWF or stayed in older, existing CWF employee houses built in earlier years to house workers from Perryville and Chignik Lake. Many commercial fishermen from these communities would move their families to these homes every summer during the commercial fishing season because returning home each night to those communities was impractical. If a commercial fisher wanted to return to her or his home in Chignik Lake, she or he had to wait for the tide to be high enough. If a commercial fisher wanted to return to his or her home in Perryville, it required traveling 63 nautical miles. The camps built by Perryville residents were all located near each other, separate from the other camps, in a section called “little Perryville” (Plate 9-1), but other houses occupied by Chignik Lake and Perryville families were also scattered along the north side of the lagoon, with most to the west of the CWF fishery. While families resided at these camps, subsistence fish were also harvested and processed. The land on which many of the houses were built was owned by the Chignik Lagoon Corporation. When CWF closed, the corporation required people who wanted to use their houses at little Perryville to pay a fee for the land. Many individuals in Perryville and Chignik Lake said that after this happened they never thought to return to their houses again. Though this was a factor for some families, the closure of CWF facility, particularly the store, was a common reason many families interviewed stated for no longer returning to their summer camps.

Going to our summer camp in the summer was always so much fun, and felt like a small village. There would be so many families that would be there, and as a child I was always running around with the other children. The dock at CWF allowed for easy access for the fishermen to get to their boats, to unload their fish, or to get their boats repaired. The store there provided us with supplies needed for our boats, food, or lumber or supplies to work on our houses. CWF also had a mess hall in the summer months where we sometimes went to eat. There was a small airstrip there, too, which was used a lot to transport people and supplies and mail. (Chignik Lake Resident)

The Columbia Ward Fisheries Co. shut down in 1990 and the extensive facilities have remained vacant ever since, in addition to the majority of the houses. When Hutchinson-Scarborough and Marchioni visited the old cannery and the houses in 2012, it appeared to the researchers that no procedures had been taken to prevent damage to the structures or damage to the surrounding environment. Buildings remained open and continued to endure extensive environmental damage. Many of the houses suffered collapsed roofs and irreparable structural damage. There were many instances where Hutchinson-Scarborough and Marchioni witnessed barrels from the CWF facilities leaking into streams and soil. The overall environmental impact of the vacated cannery facilities appeared significant. Researchers went to the fish camps with residents of Chignik Lagoon to obtain GPS locations of each structure and document which families had built each structure (Plate 9-2).



Plate 9-1.—Summer homes—fish camps making up “Little Perryville,” across from Chignik Lagoon.



Plate 9-2.—Hutchinson-Scarborough creating a GPS waypoint in front of a fish camp—summer home.

Most residents of Perryville and Chignik Lake interviewed referred to these sites as “fish camps,” while residents of Chignik Lagoon and Chignik Bay tended to refer to them as “summer homes.” They have primarily been used during the months when commercial salmon fishing has been open. Fish camps and hunting camps were once prevalent all over the CMA for the purpose of obtaining subsistence foods. However, the camps near the CWF were deemed “summer homes” by Chignik Lagoon residents, most likely because their main purpose was to house families during the commercial fishing season. Chignik Lake and Perryville residents had smokehouses and would put up their fish throughout the summer months when their family members were commercial fishing, so residents of these communities call them fish camps.

It's [the individual's fish camp] still there. I don't use it no more though. Since I quit commercial fishing, I used the summer camp for fishing. Nobody uses it anymore. Nobody from up here goes there anymore. Perryville still uses theirs down there. Sockeye and kings, silvers we would get down there. We would process them at the summer camp—smoking, or canning, whichever. Pretty much the whole family would go down there. We used to move down the end of May, the beginning of June—and move back up the end of August or something. I haven't used it since 1991 when I quit fishing. (Chignik Lake resident)

This interviewee was a Chignik Lake resident who used to commercial fish. His family used his fish camp across from Chignik Lagoon, so he could stay with them each night. When he spoke of Perryville residents still using their summer homes, he discussed 4 families who used their houses during the summers of 2011, 2012, and 2013. Hutchinson-Scarbrough and Marchioni were able to visit these families during the summer of 2012. One family was there because the male head of the household commercial fishes, and his son crews for him. The 2 other families who were staying at their fish camps when Hutchinson-Scarbrough and Marchioni arrived that summer were there because they had a family member crewing and because they could smoke fish that were brought to them from their commercial catches. Each of these families processed their subsistence fish at camp in 2013 because the fishery opened late enough to allow for a subsistence harvest with commercial gear before the commercial opening.

The closing of CWF was 1 of 3 factors Hutchinson-Scarbrough and Marchioni found for why people stopped using their camps. The 1989 *Exxon Valdez* oil spill and the formation of the Chignik Salmon Cooperative were the other 2 reasons given most frequently. In the following quote, an elder from Perryville discussed how several people stopped going to their fish camps during the years following the oil spill.

I think the oil spill had some effect in 1989. That year, tar balls were found in the area, and the lagoon was closed to commercial fishing. So several families did not come that year to stay at camp. (Perryville resident)

CHIGNIK COOPERATIVE

The formation of the Chignik Salmon Cooperative (co-op) was another response that residents from all 4 communities mentioned when discussing why residents of Chignik Lake and Perryville no longer used their camps. Commercial fishers who chose to participate in the co-op could do so without actively fishing, so families who opted to participate in the cooperative did not have a need to travel to the fish camps for the summer months. During and after the cooperative, many permit holders and crew members decided not to return to commercial fishing because the price of salmon was too low. Furthermore, when the cooperative began, it was still illegal, according to ADF&G regulation, to subsistence fish during a commercial opening (Chapter 5 discusses regulatory history). Prior to the existence of the cooperative many families would get subsistence fish with their commercial gear before the commercial fishery opened. However, when the cooperative began, ADF&G fisheries managers opened the commercial fishery earlier than in the past, and this affected how families at the camps acquired their fish. If families could not process subsistence fish, then there was little reason for them to be at their camp.

The co-op had some effect, I think. I did not join the co-op, I remained an independent fisherman, and we continued to use our camp. Some other families didn't come over because there was no need since they were not actively commercial fishing like they did before. But I think what had a bigger effect is when the CWF cannery closed and also did their store. The store supplied other groceries, supplies for camp or our boats, repair service, a dock, and when it closed, this made going to camp more of a hardship, and not as enjoyable for families. It was like a summer village back years ago. My kids and wife really enjoyed it when I was out fishing. Another thing, when the cannery closed, Chignik Lagoon Corporation, who owns the land where most of the houses are, started charging rent for people to stay there. So many people stopped going because they did not want to pay the rent, or it pissed them off because they never had to before. I paid for a while but eventually stopped. They don't give me a hard time about it either. Also a lot of those people got old and have since passed away. Or some people got divorced; families left the camp too. (Perryville resident)

The 1989 oil spill, the 1990 closing of CWF, and the advent of the cooperative in 2002 were all reasons people provided for the discontinued use of their fish camps. The most common reason given during interviews was the cannery closing in 1990. The shutting down of the CWF for economic reasons has resulted in long-lasting sociocultural and environmental effects. The families of individuals who continued to fish commercially could no longer reside by the cannery. Most families did not return to their fish camps because the cannery had a general store that provided goods during the summer months, and when the cannery shut down so did its general store. Also, without other people residing in nearby houses, families were more exposed to bear activity. Chignik Lake residents who continue to commercial fish now only see their families a few times a month, which causes strain on their home lives. Furthermore, putting fish up in front of village homes and not at the summer homes/fish camps causes more bear activity within the villages.

Hutchinson-Scarborough and Marchioni found that the Chignik Salmon Cooperative (2002–2005) was directly related to Chignik Lake and Perryville residents' discontinued use of camps across from Chignik Lagoon only in a few instances. Some people from Perryville and Chignik Lake, at least during the years of the cooperative, did not use their camps in Chignik Lagoon because they either were a part of the cooperative and did not need to fish, or because they were not able to make enough money as independent fishers for the occupation to be justified. Although the cooperative did not stop all fishers from Chignik Lake and Perryville from ever fishing again, it became obvious throughout the interviews that the cooperative created disruptions in many facets of life for each community. Many Chignik Lake and Perryville residents spoke of how the creation of the cooperative destroyed their commercial fishing careers.

During the co-op period, crew members lost jobs and had to adapt to getting different jobs, so they either stayed in the village or left the community and didn't return. It devastated the community. (Perryville resident)

Many people from Chignik Lake and Perryville had grown up crewing on commercial boats in Chignik Lagoon because they could not afford to fish their own boats and permits. Crew members lost their jobs during the cooperative years because they crewed for people from Chignik Lagoon or Chignik Bay who had joined the cooperative and no longer needed to be fishing with the same amount of effort. As the Perryville resident says above, after commercial fishing every summer since they were young these crew members often had to find other ways to make money, either in their communities or outside of them.

In a study done by Gunnar Knapp of the University of Alaska Anchorage, in the year following the end of the cooperative, it was found that between 130 and 150 crew jobs disappeared during the cooperative years (2007:33). Knapp describes how the cooperative brought long periods of waiting onshore, particularly for crews of independent boats, which made the positions less profitable. Cooperative member vessels took over the tendering of most of the Chignik harvest, forcing individuals who had traditionally tendered in the Chignik fishery to lose their tendering contracts (2007:33). Knapp (2007), similar to Hutchinson-Scarborough and Marchioni in this study, found that many Chignik stakeholders, including both cooperative

members and independent fishers, regretted how the cooperative divided Chignik area fishers, communities, and families.

LIMITED ENTRY

In 1972, an amendment to the Alaska State Constitution was passed to allow for a restriction on entry to Alaska's fisheries for certain purposes including conservation, prevention of economic distress, and promotion of aquaculture.¹ Following in 1973, the Limited Entry Act was passed, and with it, the Commercial Fisheries Entry Commission was established to administer the program. Applications for limited entry permits were evaluated against point system criteria.² A few residents of Chignik Lake and Perryville spoke of being unable to obtain limited entry permits for the Chignik salmon fishery, because the time that they served as draftees in the Vietnam War became part of the limited entry eligibility requirements. These individuals were offered an interim-use permit for the period of time they were waiting for a decision on their limited entry permits. If they were deemed eligible for a limited entry permit, it was much different than the open fishery they had experienced when they were younger.

I did [commercial fish], I had an interim permit for years, but then they finally took it away. When I was in the service that's when they started limited entry. And when I got out, I just had an interim since then. And I had it for 30 some years; they took it away finally about 3 years ago. An interim permit, it's a temporary permit. They were trying to see if I had enough points, to continue.... I had 1 or 2 more points to go. But I figured being military, drafted too of course, I thought for sure I would get one. There's a lot of boys who are in the same shoes.

They came on with this co-op deal, and that really took an effect on the fishing license. In fact I had a permit called an interim permit. They knocked me off, and I couldn't go commercial salmon fishing any more. They got to where they wanted to handle their sales, and they wanted to make their own money. And they thought they were going to make it big, but it was the biggest mistake they ever made. My boat is still down at the bay hauled up. It's all paid for; I still got my gear. Not only me, there is a whole bunch of boats. Like my boat hasn't been used for the last 9 years or so. Not only mine, there's a lot of them. No [I don't have a permit anymore], the permit I had was called an interim permit—came on in 1974. There was quite a few of the interim permits. See I was running a boat since I was 14 years old. And it just happened to be that year that I didn't run a boat, and that was the year the permit came on. They said, "Well you didn't run a boat this year, so you can't have a permit, but you can have an interim, a temporary one." You know I tried to get lawyers to get me that permit because I ran a boat since I was 14. The lawyers you know just took advantage of me and asking me the same questions and you know I paid them some big bucks—the lawyer. It didn't do any good, and they were more like taking advantage of me.

So the interim dissolved when the co-op came. Years and years ago there was no such thing as a permit; I ran fish for the company and used their boat. It was a pretty good deal; they only charged me 8%. I got what I needed, and they helped me out and made me pretty happy. And later over the years I figured I might as well get my own boat, so I started off small and I figured later over the years I would get myself a bigger boat and that never happened because they came up with this co-op deal. (Chignik Lake resident)

In order to maintain ownership of a limited entry permit, an owner must pay a fee of several hundred dollars each year to the Commercial Fisheries Entry Commission (CFEC). If this fee is not paid for 2 consecutive

1. Frank Hohman. 2006. "30 Years of Limited Entry," Presentation given at Alaska's Fishing Communities: Harvesting the Future, a conference sponsored by NOAA National Marine Fisheries Service, September 21–22, 2006, Anchorage. Accessed April 2016. <https://www.cfec.state.ak.us/pregs/Homan30YrsLimitedEntrySummary.pdf>

2. Bruce Twomley. 2003. "License Limitation in Alaska's Commercial Fisheries." Accessed April 2016. <https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/2203/Twomley,Bruce.pdf>

years, the individual loses his or her limited entry permit. During the time of the Chignik Cooperative, several individuals who had limited entry permits did not fish because they would not make enough money as private fishers without a processor to buy their catch. Without the income from commercial fishing it was probably difficult for these individuals to pay the fees required of them to keep their limited entry permits. Therefore, these fishers lost their limited entry permits and did not contact the CFEC to renew them. Some residents of each community expressed frustration to researchers about the cooperative and their perceived inability to recover the livelihood with which they had once identified. Commercial fishing was the only work these interviewees had ever known, and fishing was their only source of income. Many of these individuals have since taken temporary jobs with the village or the state as they became available, but they do not have the same income they once did. In 2010–2012 Hutchinson-Scarborough and Marchioni saw only a few people from Chignik Lake participating as crew on commercial purse seiners.

SIZE OF SUBSISTENCE HARVEST

Every household in the 4 communities surveyed during this study used sockeye salmon. Although the means of harvesting and processing and the amounts needed differed by household, every household in all 4 communities either shared or received fish from another household. There are 2 sockeye salmon runs according to Chignik ADF&G fisheries managers and the residents of the Chignik area. Sockeye salmon are caught from May through December and sometimes into the months of January and February. Because of the duration of the sockeye salmon runs into Chignik Lake, people are able to supplement their subsistence salmon stocks throughout the year. Smokehouses run well into December for some individuals who get spawned-out salmon at Clark River. Although this is a common practice, the majority of subsistence harvesting is done in spring, summer, and early fall for Chignik Lake residents, who use a subsistence gillnet. The few individuals who fish commercially from Chignik Lake obtain some of their subsistence salmon from their commercial catches in the beginning or the end of the commercial fishing season, as do most individuals who fish commercially and who live in Chignik Lagoon and Chignik Bay. Four families from Perryville, who reside at their fish camps in the lagoon during the summer, each of whom have a family member who fishes commercially, obtain subsistence sockeye salmon from their commercial catches. Most Perryville residents obtain coho salmon from the coho salmon spawning streams in the Perryville area with either a beach seine or rod and reel, or they receive sockeye salmon from their relatives in Chignik Lake or Chignik Lagoon.

Chignik Lake

Below are quotes from Chignik Lake residents in 2011 and 2012 discussing how many fish they need to put away for the winter months.

A household of 2: I would be happy if my husband gets at least 50.

A household of 2: Total? That would be probably about 60 fish.

A household of 4: I usually average, like, maybe close to 200, maybe 200.

A household of 2: About a week and a half ago I went down to my gillnet and I got 5 sockeye and 1 silver. I gave some to the neighbors and I kept 3. I just froze them. I got them at the last marker. What is it, my neighbor went out yesterday and he got 20 something.

A household of 4: The 60 I got in the spring—half got smoked and half got salted. We canned about 22, I guess. Yeah, you know I give some away to others, what I don't need. My smoked salmon are not done, I had to put them in because the bears got them. As soon as I get around to it I will make sure that they are fully smoked and dried right. The bear got about 27, and the rest are....but, yeah well, half of that was canned and kippered.

A household of 3: Well the boats they, you know, give us—I think I got about 10, maybe 20, more they will give us—‘til our freezer is full. Then I will fire up my smokehouse.

A household of 4: There is 1 batch of kippered that I made...canned 15 fish, smoked 16 fish, 4 [pint-sized] cases and 1 case with 2 short [half pints], 13 fish for 46 jars of kippered. I made 38 of the pints jars and 6 of the quart jars [these were pressure cooked fresh—no smoking]. I want to at least make 2–4 more cases of the kippered and probably 4 more cases of the canned. I took 7 fish for 2 cases of the pints. They were big! Some of those fish are huge! I would think like 63 or 65 more just for the jarring, and maybe 20 or 25 more to turn into smoked salmon and kippered. I took about 32 already. So, that makes 122 overall.

A household of 4: We usually do 5 cases of quarts and 4 cases of pints. We go through a lot of canned salmon. Probably about 75 fish this round. Yeah, we will dry about 100 or 125 in the fall. The permit says 250, but we never take that much.

A household of 2: We get about 30 sockeyes off of a neighbor’s boat when he goes commercial fishing. We freeze about 50 fish.

A household of 1: I got around 25 fish.

A household of 2: I put up at least 100 salmon. At the end of the season is the best time to do it. That is when my family does it. Even though there may be more fat on the fish when they first come in. Usually do it at the end of the commercial fishing season.

A household of 2: I will take maybe 40 or 50 for myself, but I will get a couple hundred and share them with others.

A household of 2: We like to smoke about 45 sockeye and jar 14. We send 25 fish to our daughter with 7 kids, 25 to our son with 3 kids in Port Heiden and 25 to King Salmon friends and relatives. We brine our fish for 45 minutes, hang in smoker overnight, smoke for 4 days, let the rest then smoke for 1–3 more days depending on weather.

According to household harvest surveys done in 1984, 1989, 1991, and 2003, an average of 159 lb usable weight of salmon was used per person in Chignik Lake. The average was consistent with the 2011 harvest survey that found the average harvest of salmon to be 194 lb usable weight of salmon per person (Table 7-1). Throughout interviews people made it clear that they respect the resources a great deal and only take what they, their community, and their families need.

Researchers were told in 2014 that Chignik Lake residents did not get enough salmon for subsistence from the late sockeye salmon run in 2013. During interviews and participant observation in 2012, people were getting enough fish to put away for the winter, however Hutchinson-Scarborough and Marchioni did not do harvest surveys for the 2012 or 2013 calendar years. Funding was provided from the Chinook Salmon Initiative for Hutchinson-Scarborough and Marchioni to return to the CMA to conduct harvest surveys for the 2014 calendar year. During this planned survey, researchers will ask about the previous years and if people are getting enough.

Perryville

Below are quotes from Perryville residents in 2011 and 2012 discussing how many fish they need to put away for the winter months.

A household of 1: Red-sockeye standard size 3.5 fish = 16 jars (pints); 22 fish makes 10 cases. We [a household of 2 adults and 1 child] make 10 cases, give some to kids in Anchorage, maybe 6 cases and give about 2–3 cases away to others. We can only the reds; they have a firmer texture than other salmon. If we can other salmon, they get too mushy. Coho, we usually dry them, and if we smoke fish that is what we smoke. Last

year, we smoked 10–15 pretty dry. Still good, tastes good, not as oily. Humpies, I like to get them for drying when up at creeks, when lost fat, makes a difference.

A household of 2 that commercial fishes and provide subsistence fish for many people in the community: King [Chinook] salmon...What king salmon? They [commercial fishers] make their money first then we get to eat. We do not look at kings as a money fish. It is worth more to local families to keep it than to sell it. I usually get 25 kings, and freeze them whole. When I have time in the fall I will thaw them out and clean them, strip them and smoke them.

In 2012 I made 2 trips to Perryville during the commercial season with salmon for Perryville village. First trip 300 sockeye, second trip 100 sockeye.

Harvest spawned out with a gillnet, but we hardly ever get them in Perryville area in November. Some families go to Chignik Lake–Clark River to get their spawned out. We like to dry these because they have less fat, will not spoil as easily and make for a jerky type food that tastes very different than smoked salmon, and makes for a good camping or food to take on the boat. Spawn out...the meat turns from red to light pink, and the flesh turns from silver to red. We also like spawnout silvers, but they are harder to get here.

During interviews and surveys in 2012, for the 2011 calendar year, it was found that people in Perryville were not getting the amount of coho salmon they once did, nor were they getting enough to meet their needs. The commercial fisher quoted above was 1 of 2 commercial fishers who helped residents of Perryville by bringing them subsistence-caught sockeye salmon before and after the commercial openings. According to household harvest surveys done in 1984, 1989, and 2003, an average of 216 lb usable weight of salmon is used per person in Perryville. This is consistent with the findings of harvest surveys in 2011 that show an average harvest of 231 lb useable weight of salmon per person. The data show a significant decline in the amount of coho salmon harvested in 2011 compared to previous years (Table 7-4). In 2011 the average coho salmon harvest per person was 39 lb usable weight, in 2003 it was 79 lb, in 1989 it was 77 lb, and in 1984 it was 121 lb. The retention from commercial sockeye salmon catches of a few Perryville residents in 2011 is what kept the overall salmon poundage consistent with recent years. The Perryville per person average of sockeye salmon in 2011 was 140 lb of usable weight; the average for the 3 previous survey years was 64 lb (Table 7-2). Residents attribute the lower subsistence coho salmon harvest to a decline in the local coho salmon stocks.

Chignik Lagoon

Below are quotes from Chignik Lagoon residents in 2011 and 2012 discussing how many fish they need to put away for the winter months.

Household of 8: Caught about 250 on seine boat this year. One hundred thirty for our family, and our friend from up by Matanuska Glacier gets 70, which he shares with his family and employees. Ten go to friends in Anchorage. Fifty are then used for canning. Of the 130 we kept [for ourselves], 110 went in the smokehouse. Twenty-five were removed half way through smoke for kippering. Ten were filleted and frozen. Smokehouse [fish were] brined with fresh water and rock salt, enough solution to make a potato with a nail in it float. Brine about 1 hour, hang overnight to dry, light a fire in smokehouse, use cottonwood and alders. Smoke 3 days in a barrel smoker. Remove some for kippering until “hard.” Kipper jars, 1/2 pint. Smoke the rest 2–3 more days to harden. Fish will not take any more smoke after 3 days because hard skin forms on it. To complete smoking is only to dry. Make hard and preserve. Gave away some to ADF&G researchers and some to their friend, maybe 50 total [given away]. Silvers we salt, and smoke pinks.

We can 50 fish [sockeye salmon]. Each of the 4 families takes a case. Our family keeps 160 sockeye for smoking; 50 fish for canning; 30 spawnouts for drying; 20 reds in the fall time for freezing; and 10 silvers for salting. This fall we will bring home about 80–90 more fish and will freeze them until the weather is colder and better after the frost so there will not be any flies to ruin the fish. After the first frost is a good time to smoke fish, especially humpies.

We (a household of 2 adults) put up about 3–4 kings, but there were a total of 16 between all families. We remove them from commercial harvest, but our sons get theirs from sport fishing. We like to smoke them [the kings] in a Little Chief Smoker³. We experiment with different flavors.

Household of 2: We only took 75 total in the spring. We split it between 4 families including us; we kept 21 ourselves. We vacuum sealed most of them because our canner was broken. We intend to do our smoked salmon at the end of the [commercial] fishing season, along with smoking our kings. We prefer king salmon.

According to household harvest surveys done in 1984, 1989, and 2003, an average of 138 lb usable weight of salmon was used per person in Chignik Lagoon. This was consistent with the findings of harvest surveys in 2011 that showed an average harvest of 158 lb useable weight of salmon per person. (Table 7-1). In 2011, people in Chignik Lagoon generally reported getting enough salmon to meet household needs.

Data regarding salmon harvesting processing and amounts in Chignik Bay are found in Chapter 7 of this report. Researchers conducted interviews and participant observation in all communities but Chignik Bay, because many of the Chignik Bay year-round residents were already commercial fishing by the time that Hutchinson-Scarborough and Marchioni arrived in 2011 to conduct interviews. The first sockeye salmon run arrived early and strong in late May and by the time researchers arrived, this community had already obtained their subsistence fish with their commercial boats before the commercial opening, or did so later in the season after the commercial fishing season ended.

Overall the amount of salmon that each study community needs has remained consistent over time. However, the amount they are able to acquire is constantly shifting and depends on many factors each year. In recent years Chignik Lake and Perryville have had the most difficulty getting the number of salmon they require to meet household needs. The inability to get enough salmon over a prolonged period could, over time, have influences on the amount perceived to be necessary for individuals in a community.

ENVIRONMENTAL FACTORS

Perryville Coho Salmon Decline

Lots of salmon run through here....4 or 5 purse seines would be out here. Sometimes they get too much of it and the fish won't get to the streams. A huge amount of silvers used to go in here....now they don't. (Perryville resident)

The quote above is from an elder who has lived in Perryville his entire life. He was not alone in his concern for the coho salmon stocks in Perryville in 2012. Many people spoke of being unable to get enough coho salmon to meet their subsistence needs. Many individuals were not successful in harvesting coho salmon in 2012 and had to rely on what was given to them. Perryville residents were the least successful at obtaining coho salmon of all communities surveyed in the CMA. In 2011, 57% of households in Perryville attempted to harvest coho salmon while only 43% were successful (Table 7-4).

The department [ADF&G] managed the species around Perryville as a pelagic fishery instead of a terminal fishery. The fish were mismanaged so they have been depleted. The

3. Product names are given because they are established standards for the State of Alaska or for scientific completeness; they do not constitute product endorsement.

department does not care about the coho runs in Perryville, they never have. Why I get so damned pissed off. (Perryville resident)

It is clear from 2011 harvest survey data that residents of Perryville are not getting enough subsistence coho salmon. According to 2011 harvest survey data Perryville harvested a total of 773 coho salmon (Table 7-4), which equates to 39 coho salmon per person. The total number of subsistence harvested coho in 2003 was 1,563, or 79 coho salmon per person, in 1989 the total was 1,451 or 77 per person, and in 1984 the total was 2404, or 121 coho salmon per person Table 7-4). There is no monitoring of the Perryville coho salmon runs aside from commercial fish ticket reporting in the CMA. Perryville area coho salmon runs were decreasing up until 2009 when the last coho salmon count was recorded by a state or federal agency (Anderson, 2009). Many residents believe this is due to a lack of state management interest in conjunction with environmental changes such as glacial melt and volcanic activity.

Runs to Kametolook, Long Beach, [and] Three Star have changed due to the melting glacier on Veniaminof [that] is causing these rivers to fill with glacial silt, which affects the survivability of the eggs that need gravel. Also there was a large flood that hit the area [5 years ago] that washed out Ivanof Bay, Clark River, Chignik Lake, and in Kametolook, Three Star, Long Beach, etc. All rivers on the Pacific side. This washed away any surviving eggs and fry. It also changed the channels of the rivers and the silt. (Perryville resident)

Weather patterns are harder to predict and intensifying. When we come back from fishing in Chignik in August, we usually do not find a lot of fish in the local creeks. Previous years, there used to be a lot in Kametolook and [at] Three Star. Kametolook was closed to subsistence fishing for a few years. In 2011, there were no fish in Kametolook that we found. The volcano has been more active, too, and melting the glacier and filling our rivers with silt and glacial dust, and the channels are always changing too. (Perryville resident)

The last 2 decades have shown an increase in volcanic activity from Mt. Veniaminof.⁴ Many elders in Perryville, including the interviewee above, noted that the increased volcanic activity is causing the rivers and streams to change, and this in combination with overfishing is negatively affecting the nearby coho salmon runs.

Decline in Quantity and Variety of Wildlife

This [Chignik Lagoon] used to be a wonderful place for wildlife. It still is, but not like it was. There were a lot of harbor seals and lots of ducks. There used to be a lot more Canadian geese when I was younger. (Chignik Lagoon resident)

Above is a quote from an elder in Chignik Lagoon who spoke extensively about the decreased abundance of wildlife in the area. He discussed the extensive use of fish traps in the past and the negative effect the traps had on the salmon stocks and other wildlife. He discussed how ADF&G rebuilt the salmon stocks after the fish traps were removed, but other wildlife was never able to recover. Similarly, an elder in Perryville discussed below how groundfish stocks were overfished and how Perryville residents are feeling the effects.

We would subsistence fish with a skate for halibut and rockfish. Just recently we went out and tried for halibut, and all day we only got 1 little cod—everything just disappeared... fished out. (Perryville resident)

The majority of interviewees expressed concern for the salmon stocks, as well as other species of fish and game, because of the negative changes they say to have witnessed over their lifetimes.

4. Alaska Volcano Observatory, n.d. "Mount Veniaminof description and information." Accessed November 2014. <https://www.avo.alaska.edu/volcanoes>.

Effects of Sport Fishing

More and more sport fishing—I don't really like that deal. The kings are the ones that are pretty skimpy, and they are the ones they're [sport fishers] mostly after. It really pisses a lot of people off; that's for sure. One reason is they throw a lot of trash in the river. (Chignik Lake resident)

A few Chignik Lake residents were concerned with the increased number of sport fishers fishing for Chinook salmon in the area. The sport fishers are seen as having a negative effect on the already decreasing Chinook salmon population. One Chignik Lake resident sent a letter to the Chignik Lake, Chignik Lagoon, and Chignik Bay village councils, in addition to all sport fishing guides in the area, voicing his concerns about the pollution being caused by nonlocal sport fishers. Many residents of Chignik Lake said that some sport fishers tend to throw their garbage overboard, and it washes up on the beach in front of their community.

MANAGEMENT OF THE CMA SALMON RUNS

They [previous ADF&G managers] have destroyed the second sockeye run to Chignik because they want to keep Area M and Bristol Bay fishermen happy. Ninety percent of the fish destined for Chignik are caught by other fishermen including the Japanese. Japanese intercept much of Alaska's salmon. People used to be able to harvest about 250 fish [sockeye] per household. Now people [Perryville residents] are only getting about 100 due to the quantity available. (Perryville resident)

The respondent above is referring to people in Perryville who obtain subsistence salmon from Chignik Lagoon and Chignik River. However, the concern for others who may be catching Chignik fish before they reach Chignik Bay was expressed by residents of all 4 study communities. Commercial and subsistence fishers alike said that the Kodiak fishery is the primary determining factor for when the Chignik fishery opens. Most residents of the 4 communities feel this is unfair and that the fishery should be managed based on their needs, since the fish are returning to their waters. In the annual ADF&G Chignik management report, Anderson et al. (2013:4) mention that in 2012, for the first time, and again in 2013, genetic stock composition information was collected and analyzed inseason, and the information was used to assist with management decisions in the CMA.

FACTORS THAT AFFECT THE SUBSISTENCE SALMON FISHERY

Based upon participant observation and interviews, there appeared to be several environmental, economic, and sociocultural factors that have shaped long-term trends in the subsistence fishery. The factors explained in this section, including the transmission of traditional knowledge across generations, the shift away from using fish camps, the lasting effects of the commercial fishing cooperative, the changing amounts of salmon needed in a year, and the fluctuating environmental patterns, are the most significant factors that have shaped the subsistence fishery into what it is today. Below are other variables found that affect the subsistence fishery each year and throughout the fishing season.

FACTORS THAT SHAPE ANNUAL VARIATIONS IN SUBSISTENCE SALMON HARVESTS

Annual variations in subsistence salmon harvests at both the household and community level were most likely shaped by the following factors:

1. Environmental factors, specifically annual variations in salmon run size and timing; weather, especially the amount of rainfall, wind, and water and air temperatures; perceptions of pollution levels from old dumps, sport fishing guides and motorized vehicle exhaust; water levels in the lakes and rivers; the presence of bears at processing facilities; and bears, beavers, and freshwater seals at harvesting sites.

2. Economic factors, specifically the cost of fuel and supplies; availability of paid income jobs that do not allow time for subsistence practices; the availability of alternative resources, such as big game and halibut; the availability and cost of store bought foods to be shipped in; the price for commercially-caught salmon versus whether retaining salmon for home use was feasible monetarily.
3. Sociocultural factors, specifically the commitments by individuals and families to fishing and processing; the number of celebrations in a given year that require additional subsistence foods; the availability of traditional knowledge about fishing and processing methods; and the number of social engagements outside of the community to which people need to travel, resulting in less time for subsistence practices.

Over the last few decades, subsistence salmon harvests have only remained at their relatively stable levels because of residents' commitment to sustainable harvesting practices; their commitment to a way of life that involves subsistence salmon fishing and processing; the passing on of traditional knowledge; the continued integration of the subsistence fishery into local social organizations; and the significant contribution of subsistence salmon harvests to the local food supply, a supply that could not be replaced.

The future of the subsistence fisheries will depend on maintaining healthy salmon runs; maintaining access to the resource; maintaining the affordability of shipping fuel and supplies into the communities; and providing wage employment opportunities, such as commercial fishing and other local jobs. The future of the fisheries also depends on the choices that individuals make about teaching, learning, and practicing traditional subsistence activities.

10. CONCLUSIONS AND RECOMMENDATIONS

This report concludes with a summary of key findings, followed by a list of recommendations directed primarily to fisheries managers but also intended for local community residents and leadership.

1. Healthy salmon stocks are a vital component to continued subsistence practices, food security, and economic stability, and therefore to the cultural continuity, of the communities of Chignik Lake, Chignik Lagoon, Chignik Bay, and Perryville. Subsistence salmon fishing provides substantial quantities of food to all community residents, ties extended families and neighbors together, creates bonds between adults and children via the continued transmission of knowledge, and perpetuates connections between individuals and the natural environment.
2. Household survey data demonstrate that relying solely on returned subsistence salmon permits results in underestimation of subsistence harvests in the 4 study communities. In many cases, this appears to be the consequence of: a) several households working together under a single or multiple permits but having a misunderstanding of how to fully document the harvesting done by all households; b) key fishers providing salmon to many households and sometimes not recording salmon given away in fear of reporting harvests of more than maximum fish allowed on permit; and c) the effort required to locate a permit, recall harvest numbers, fill out a permit, and send in a permit that was received much earlier in time. Some fishing households simply fail to obtain a permit; however, the numbers increase significantly each year Division of Subsistence staff was responsible for administering and collecting permits. Researchers encountered virtually no reluctance on the part of subsistence fishers to report harvests because most who obtained permits returned them, and others readily agreed to be surveyed about their harvests. Residents of the 4 communities were very thankful for the continued ability to obtain their traditional subsistence foods.
3. Additional outreach to emphasize the benefits of accurate and complete reporting of subsistence harvests is necessary in each community in order to encourage households to obtain permits and record their harvests. In the meantime, postseason surveys need to continue in order to develop reliable final harvest estimates.
4. Family engagement in subsistence salmon fishing each summer is affected by various sociocultural, economic, and environmental circumstances. No single factor appears to determine levels of effort and harvest. In general, families appear to have goals for subsistence salmon harvests that are fairly stable over time. Stock health and run timing, weather patterns, alternative resources, fuel and supply costs, wage employment, the timing of commercial fishery openings, personal and community events, and individual commitments to traditional subsistence fishing all combine to influence decisions about subsistence fishing activity.
5. Many subsistence salmon fishery participants expressed concerns that young people did not share their commitment to the subsistence salmon fishery and the subsistence way of life, which they believe are among the foundations of their communities. However, the project documented much evidence of the involvement of youth and the commitment of parents and elders to teaching traditional practices and values.
6. Finally, the project provides ample evidence of the sustainability of the CMA watershed subsistence salmon fisheries. Subsistence fishers have developed fishing and processing practices that promote conservation and self-management, such as strategies to achieve, but not exceed, harvest goals and prohibitions against waste.

RECOMMENDATIONS

These recommendations are based on the project's findings regarding factors that have shaped trends in the CMA subsistence salmon fisheries, with the goal of supporting the sustainability of the fishery, the

communities, and the way of life that the fishery supports. These recommendations are intended for fisheries managers, for community residents, and for the leadership of these communities.

1. A comprehensive and reliable subsistence salmon harvest assessment program needs to continue for the fishery of each community. This program is necessary so that trends in the fishery can be tracked and understood. (See the “guiding principles” for a unified subsistence fisheries harvest assessment program in Fall and Shanks [2000:B-8]).
2. Continued outreach needs to occur in the communities about the need for accurate subsistence harvest data, including full participation by all subsistence fishers in the harvest monitoring program. Full support for these programs and outreach efforts needs to come from local governments and community leaders.
3. Because the subsistence permit system consistently underestimates harvests, the permit system should continue to be supplemented with postseason household surveys or other methods to verify the harvest data and assure that the harvests of all fishery participants are counted when harvest estimates are developed. (See also Fall and Shanks[2000:B-16–B-18] for recommendations about harvest data collection procedures, supplementation of permits, and in season data collection via postseason interviews.)
4. In the CMA subsistence salmon fishery, as in most other traditional subsistence fisheries in Alaska, extended families work together to harvest and process salmon. Some of these family members are not year-round residents of the area communities. Regulations that limit or prohibit participation by these nonlocal family members are discouraged. These regulations could disrupt harvesting and processing groups and create hardships for local residents who depend on the contributions of these family members to the family’s production of their annual food supply. Furthermore, such regulations could prevent youth from outside the communities from learning fishing and processing methods, as well as other traditional knowledge, from their relatives and elders in their ancestral communities.
5. Residents of CMA communities need to be active in the fish and wildlife regulatory systems, including participation on advisory committees, regional councils, and in the regulatory board process. The effective management of fish and wildlife and the protection of subsistence fishing and hunting opportunities depends upon the involvement of people who have direct knowledge of salmon (and all subsistence resources) and their habitats.
6. The sustainable, self-management practices at work in this subsistence fishery should be acknowledged. Community families set sustainable harvest goals and have developed fishing and processing methods that enable them to achieve their goals in a non-wasteful manner. The residents of these communities know that the future of their traditions and way of life depend upon healthy salmon stocks, and they are doing their part to conserve these vital resources.

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APPENDIX A—SURVEY INSTRUMENT

Chignik Management Area, Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville
January to December 2011

This survey is used to estimate subsistence harvests and to describe community subsistence economies. We will publish a summary report, and send it to all households in your community. We share this information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park Service. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage subsistence, and to implement federal and state subsistence priorities.

We will NOT identify your household. We will NOT use this information for enforcement. Participation in this survey is voluntary. Even if you agree to be surveyed, you may stop at any time.

HOUSEHOLD ID:	
STRATUM ID:	
COMMUNITY ID:	
INTERVIEWER:	
INTERVIEW DATE:	
START TIME:	
STOP TIME:	
DATA CODED BY:	
DATA ENTERED BY:	
SUPERVISOR:	



COOPERATING ORGANIZATIONS

DIVISION OF SUBSISTENCE
ALASKA DEPT OF FISH & GAME
333 RASPBERRY ROAD
ANCHORAGE, AK 99518
267-2353

BRISTOL BAY
NATIVE ASSOCIATION
BOX 310
DILLINGHAM, AK 99576
842-5257

NATIVE VILLAGE
OF PERRYVILLE
BOX 89
PERRYVILLE,
AK 99648
853-2203

CHIGNIK BAY
TRIBAL COUNCIL
BOX 50
CHIGNIK AK. 99564
749-2445

CHIGNIK LAGOON
VILLAGE COUNCIL
BOX 9
CHIGNIK LAGOON, AK 99565
840-2281

CHIGNIK LAKE
TRADITIONAL COUNCIL
BOX 33
CHIGNIK LAKE, AK 99548
845-2212

HOUSEHOLD MEMBERS

HOUSEHOLD ID

First, I would like to ask about the people in your household, permanent members of your household who sleep at your house. This includes students who return home every summer. I am NOT interested in people who lived with you temporarily, even if they stayed several months.

Last year, that is, between January 1, 2011, and December 31, 2011, WHO were the head or heads of this household?

Is this person answering questions on this survey?	How is this person related to HEAD 1?	Is this person MALE or FEMALE?	Is this person an ALASKA NATIVE?	In what year was this person born?	How many years has this person lived in Chignik?	In 2011, did this person have...						
						A subsistence SALMON permit?			A subsistence HALIBUT SHARC?			
ID#	circle	relation	circle	circle	year	number	circle	permit number	return	circle	permit number	return
HEAD	Y N		M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
1												
NEXT enter spouse or partner. If household has a SINGLE HEAD, leave HEAD 2 row BLANK, and move to PERSON 3.												
HEAD	Y N		M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
2												
BELOW enter children (oldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household.												
PERSON 3			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
3	0											
PERSON 4			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
4	0											
PERSON 5			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
5	0											
PERSON 6			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
6	0											
PERSON 7			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
7	0											
PERSON 8			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
8	0											
PERSON 9			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
9	0											
PERSON 10			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
10	0											
PERSON 11			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
11	0											
PERSON 12			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
12	0											
PERSON 13			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
13	0											
PERSON 14			M F	Y N			Y N ?		Y N ?	Y N ?		Y N ?
14	0											

* "BIRTH HOME" means the place this person's PARENTS WERE LIVING when this person was born.

: 00

CHIGNIK: 85

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in commercial fisheries?..... Y N

2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011),
did you or members of your household PARTICIPATE in a commercial fishery?..... Y N

IF the answer to QUESTION 2 is NO, go to the subsistence harvests section.

IF the answer is YES, continue on this page...

During the last year,¹

did you or members of your household....

A ...FISH commercially for _____?

B ...KEEP any _____ from your
commercial catch for your own use² or to
share?

If
KEEP is
"yes"

Read names below in blanks above	A COM FISH?	B KEEP?
CHINOOK SALMON	Y N	Y N
KING SALMON	Y N	Y N
113,000,001		
SOCKEYE SALMON	Y N	Y N
RED SALMON	Y N	Y N
115,000,001		
COHO SALMON	Y N	Y N
112,000,001		
CHUM SALMON	Y N	Y N
DOG SALMON	Y N	Y N
111,000,001		
PINK SALMON	Y N	Y N
HUMPIES	Y N	Y N
114,000,001		
	Y N	Y N
	Y N	Y N
	Y N	Y N
	Y N	Y N
	Y N	Y N

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALY HARVESTED salmon that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

How many were removed for your OWN USE? ⁵	How many were removed for your CREW? ⁵	How many were removed to give to OTHERS?	Person ID from page 2	
number	number	number	number	comments

RETAINED COMMERCIAL HARVESTS continued on next page...

¹ "LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.

² "USE" includes eating, feeding to dogs, sharing or trading with others, etc.

³ UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

⁴ "INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commercial fishery.

⁵ Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.

COMMERCIALY HARVESTED RESOURCES: 03

CHIGNIK: 85

Household ID

- If the answer to question 2 is NO, go to the SALMON assessment questions page.
If the answer to both questions are YES, continue on this page...

Condition, or spawning stage, of salmon...

- B: "bright" or pre-spawn salmon
R: "red" or spawning salmon
S: "spawned-out" or post-spawn salmon
?: "unknown" or salmon whose spawning condition is not known

Read the species names below in the blanks above.

[illegible][illegible][illegible]

Subsistence Harvests: Salmon continued...

Household ID

Use this space to list additional harvests of salmon if you have run out of room on the preceding pages.

Read the species names below in the blanks above.

If the answer to the harvest question (E.) is yes, please estimate how many salmon all members of your household harvested for subsistence uses during the last year.

Include salmon that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. Report only this household's share of the harvest.

	A Use	B Try	C Har	D Rec	E Giv	Date dd / mm	Location name	Condition circle ONE B R S ?	Gear type (NOT commercial) name	Harvest number
Additional	Y N	Y N	Y N	Y N	Y N					
<i>list species</i>										
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		

	Use	Try	Har	Rec	Giv	Date dd / mm	Location name	Condition circle ONE B R S ?	Gear type (NOT commercial) name	Harvest number
Additional	Y N	Y N	Y N	Y N	Y N					
<i>list species</i>										
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		
								B R S ?		

Assessments: Salmon

110,000,000

Between January and December, 2011...

did your household use LESS, the SAME, or MORE salmon than in recent years?.....

If LESS or MORE,...

WHY was your use different?.....

1

2

Last year...

did your household GET ENOUGH salmon?.....

If NO...

What KIND of salmon did you need?.....

How would you describe the impact to your household of not getting salmon last year?.....

minor? (1)

major? (2)

severe (3)

Did your household do anything DIFFERENTLY because you did not get ENOUGH salmon?.....

If YES...

What did your household do differently?.....

1

2

FISHERY PARTICIPATION

HOUSEHOLD ID

SALMON

Does your household own a net for harvesting salmon?
 Did you share your net with another household?
 If yes how many other households?

Y	N	
Y	N	
(# Other HH)		

How long has your family used your current fishing location(s)?
 Does your household use the same location each year to harvest salmon?
 If not why has this changed over time?

(Years)	
Y	N

PARTICIPATION IN FISHERIES AND COMMUNITY

Does your household own a boat?

Y	N
---	---

What are the top 3 most important fish eaten in your household?

1	
2	
3	

Does a member of your household participate in ANY commercial fishery?

If yes ...which fish and area?

	Species	Area
1		
2		
3		

How much of your household income comes from commercial fishing? 0% 1-25% 26-50% 50-75% 76-100%

1	2	3	4	5	
---	---	---	---	---	--

Has a member of your household held a position on a local advisory council related to subsistence fisheries?

Has a member of your household held a position or actively participated in a local commercial fishing organization?

Has a member of your household ever testified or participated in a Federal Subsistence or State Board of Fisheries meeting?

Y	N
Y	N
Y	N

In your opinion, what are the reasons you continue to live in Chignik? List most important reason first.

1	
2	
3	

Do you plan on leaving in the future?

If so why?

--

Do you consider COMMERCIAL fishing to be important for the economy of Chignik?

Not important 1 Important 2 Very important 3

--

SALMON: 04

CHIGNIK: 85

SUBSISTENCE HARVESTS: BROWN BEAR

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt BROWN BEAR for subsistence?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011),
did you or members of your household USE BROWN BEAR?..... Y N
3. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011),
did you or members of your household HUNT for BROWN BEAR?..... Y N

IF the answers to QUESTIONS 1, 2, and 3 are ALL NO, go to the next harvest page.

IF ANY of the answers are YES, continue on this page...

During the last year¹,

did you or members of your household....

- A ...use² ?
- B ...receive _____ from another HH or community?
- C ...give _____ to another HH or community?
- D ...try² to harvest ?
- E ...actually harvest any _____?

IF
harvest
is YES

Read names below in blanks above	A	B	C	D	E
	USE?	REC?	GIVE?	TRY?	HAR?
BROWN BEAR	Y	Y	Y	Y	Y
	N	N	N	N	N
210,800,000					

Please estimate how many large land animals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.

INCLUDE large land animals that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

SEX	January	February	March	April	May	June	July	August	September	October	November	December	Unknown	Units ³
circle	number killed in each month													specify
Male														IND
Female														
Unknown														
Male														
Female														
Unknown														

Where did you hunt? (Please list specific areas.)..... 1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Did you shoot and loose any bears? Y N

If YES, how many? _____

During the last year (between January 1, 2011, and December 31, 2011),
how many days did you or members of your household spend
hunting for subsistence BROWN BEAR? _____

LAND MAMMALS: 10

CHIGNIK: 85

SUBSISTENCE HARVESTS: BROWN BEAR continued...

HOUSEHOLD ID

What did you use the BROWN BEARS that you harvested for?

Please circle all that apply.

If "other" please describe in the space provided.

Fat		Meat		Fur		Other		please describe
Y	N	Y	N	Y	N	Y	N	

Other

ASSESSMENTS:

200,000,000

To conclude our section, I am going to ask a few general questions about .

During the last year¹,

...did your household use LESS, SAME, or MORE than in recent years?..... X L S M

If LESS or MORE...

X = do not use

WHY was your use different?.....

1

2

During the last year¹,

...did your household GET ENOUGH ?..... Y N

If NO...

What KIND of did you need?.....

WHY did your household NOT get enough ?.....

1

2

How would you describe the impact to your household

of not getting enough last year?..... not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough ?..... Y N

IF YES...

What did your household do differently?.....

1

2

NETWORKS & ASSESSMENTS OF : 66, 67

CHIGNIK: 85

COMMENTS & SUMMARY	HOUSEHOLD ID	
-------------------------------	--------------	--

QUESTIONS, COMMENTS, CONCERNS

Do you have any questions, comments, or concerns?

INTERVIEW SUMMARY

Use this space for interviewer's comments about survey, especially factors that might have affected the household's responses.

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

INTERVIEW SUMMARY: 30	CHIGNIK: 85
-----------------------	-------------

APPENDIX B—KEY RESPONDENT INTERVIEW PROTOCOL

Chignik AKSSF1` 564372 Key Respondent Subsistence Salmon Interview Questions

Alaska Department of Fish and Game, Division of Subsistence

Funding, Alaska Sustainable Salmon Fisheries Fund

June, 2011

Subsistence Fishing Questions:

- Do you subsistence fish? If so, how long have you been subsistence fishing? Have you ever taken time off from subsistence fishing? Do you fish for your whole family?

- What areas do you usually fish for the different types of salmon species? (Map Locations)
 - First run

 - Second run

- Are there other areas you use only on occasion, or have used in the past and do not use any more? If so please list the locations here and indicate where they are on the map. Examples of areas may include Black Lake or other tributaries to Chignik Lake.

- How do you decide the quantity of fish you need for your family to subsist on during the winter?

Explain during what run times, and for which salmon species, you use the specific gear types listed below. Please mark the locations, salmon species, gear types and time of year on the map.

- Rod and Reel (snagging)
 - Hook and Line (snagging)
 - Gill Net
 - Hand Seine
 - Purse Seine
 - Removal from Commercial Catch
 - Spear/ Dip Net, other
- Explain why you use specific gear types for different fish or locations?

Do you have a preference in regards to the sex of the salmon you obtain during the different salmon runs? If so, when do you prefer male or female fish, and why? (please include what

- How do you process the fish? Please note what species of salmon are harvested in a particular way. Please indicate your family's usual harvest of salmon for each of the following preservation methods.

Quantity for:

- Freeze
 - Smoke
 - Dry
 - Can
 - Salt
 - Eat Fresh
- Which family/community members are responsible for the different jobs involved in preserving fish for the winter months?

- Do men and women perform different jobs?
- How are tasks divided up?
 - Gender?
 - Age?
 - Relationships?
- According to what you have observed over the years, what would you say is the pattern of fishing in Chignik Lake? (seasons, location if not already answered, participants, quantity, etc.)

Fish Camps: (need to map genealogy connections to fishing but do this at end of interview)

Do you have a fish camp? If so, please show its location on the map.

When at fish camp, where do you fish, what species of salmon do you catch and how do you catch them?

Where do you process the salmon you acquire at fish camp?

Do you go there every summer? If so, when do you go?

If you no longer use your fish camp, please explain how long ago you stopped and the reason(s)?

Please list the family members that use the fish camp and where they live.

History:

- Please describe how subsisting on salmon from Chignik Lake, Lagoon, Bay was in the past.
- Have the runs changed over time? If so, how?
- Is the quality of fish different?
- Has the number of people subsistence fishing changed over the years? If so, how has this affected your practices?
- Has the number of salmon you harvest changed from previous years?
- Have you been consistent in the amount of fishing you've done over time?
- Does your employment effect how often you are able to subsistence fish and your productivity?
- Do you face any difficulty acquiring your target number of fish? Does the younger generation help with the fishing? Are salmon abundant and accessible?)
- Do you feel that the climate is changing and if so, do you notice differences in the resources? Explain.
- Are there areas that elders in your village, or your ancestors, used for subsistence salmon fishing that are no longer being used? If so, why do you think this is? Also, please describe where these locations are and mark them on the map?

- Do you know what gear was used in the past to catch salmon in Chignik Lake? If so, what gear was used?

Commercial Fishing:

- Do you currently participate in Commercial Fishing? If so what fishery (salmon, cod, herring)?
- Have you participated in commercial fishing in the past but no longer do? If so, why?
- If you still commercial fish, are you crew or captain?
- If you commercial fished last summer (2010) did you remove salmon from your commercial catch for home use? ("home pack")
- If so, how much (for each species) did you remove for your own use? (Captains, please indicate the total salmon removed for you and crew, then indicate of that amount how much you took home yourself)

Total Sockeye removed for home use:

- Total Sockeye removed for Captain's personal use:

Total Chinook removed for home use:

- Total Chinook removed for Captain's personal use:

Total other salmon removed for home use:

- Total Other Salmon removed for Captain's personal use:
- Captains, did you report all of these removed salmon on your commercial fish ticket?

Commercial Fisheries' Affect on Subsistence Fishing Practices:

- Do you feel that the Coop Commercial fishery that took place during the summers of 2002-2006

(4 seasons), changed your subsistence salmon activities? For example, are you no longer frequenting your fish camp or have you changed your fishing location, time of year, quantities etc.?. Please explain changes and state the reasons for them.

- Do you have to fish in different areas now because of the Coop Commercial fishery?
 - Where did you fish prior to the Coop and where do you fish now? (Please show this on the map)
 - If you did change locations, please explain why?

Do you get your salmon at a different time of year now because of the Coop fishery? Explain when this is and why?

Regulations:

- Describe what you know of the subsistence fishing regulations and your perceptions of the subsistence fisheries' management.
- Are any particular regulations affecting your subsistence practices? If yes, please explain which ones and why.
- Do you have any recommendations for regulatory change or management?
- Do you have any questions or comments?

Genealogy of a fish camp – Subsistence salmon harvests:

- chart relationships to the family subsistence harvests and sharing network

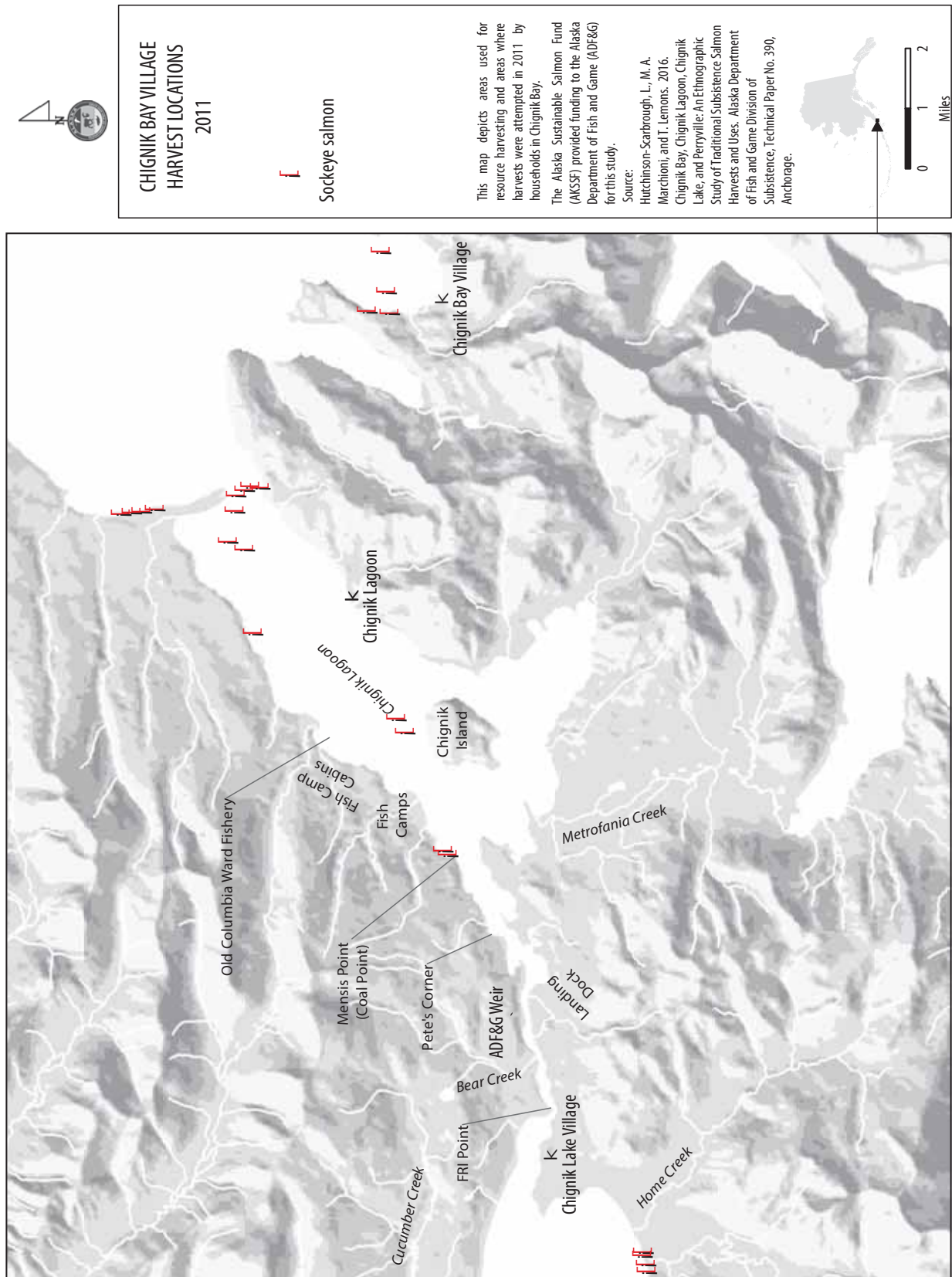
APPENDIX C—CONVERSION FACTORS

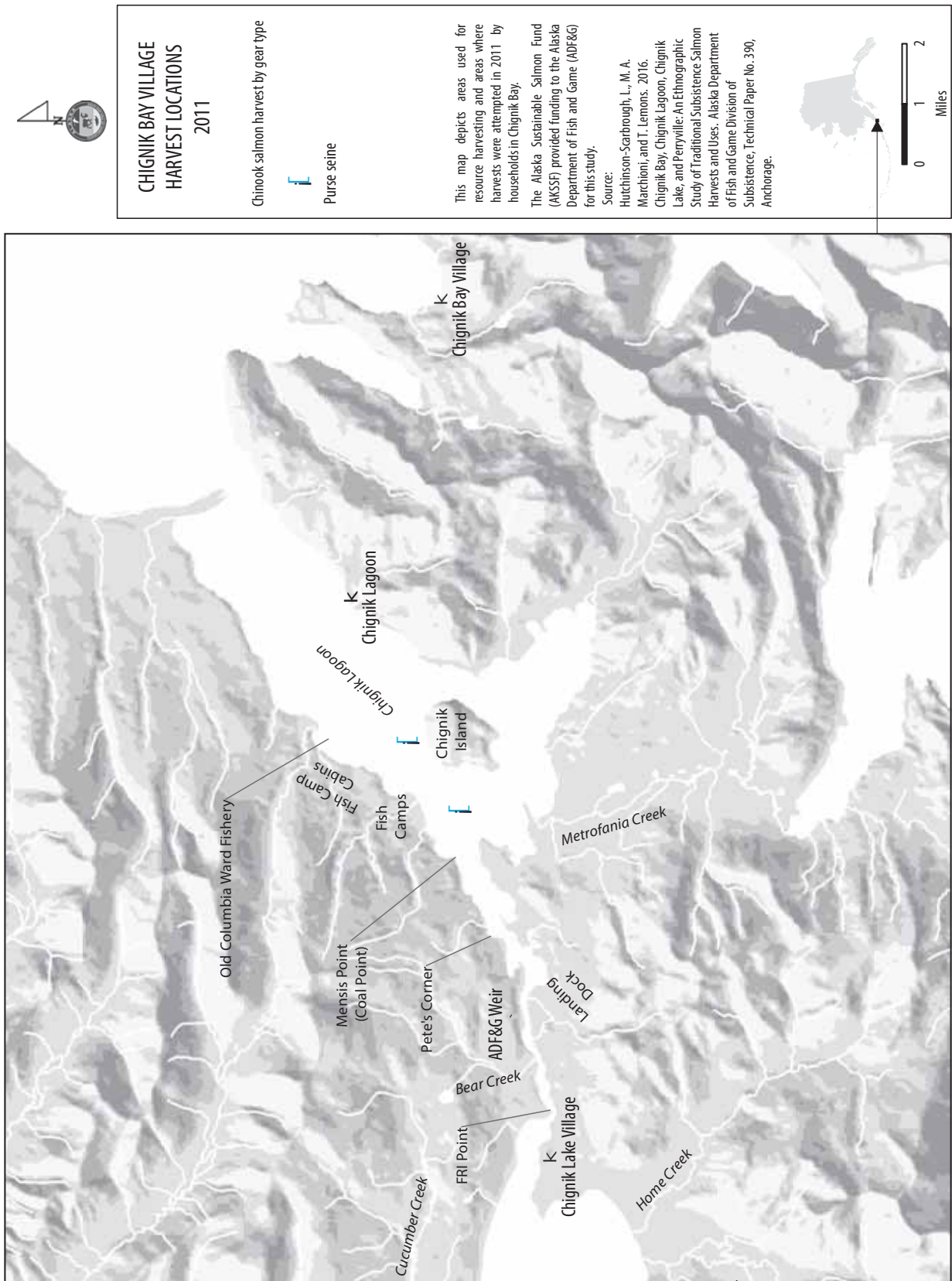
The following table presents the conversion factors used in determining how many pounds were harvested of each resource surveyed. For instance, if respondents reported harvesting 10 sockeye salmon, the quantity would be multiplied by the appropriate conversion factor (in this case 5.302) to show a harvest of 53.02 lb of sockeye.

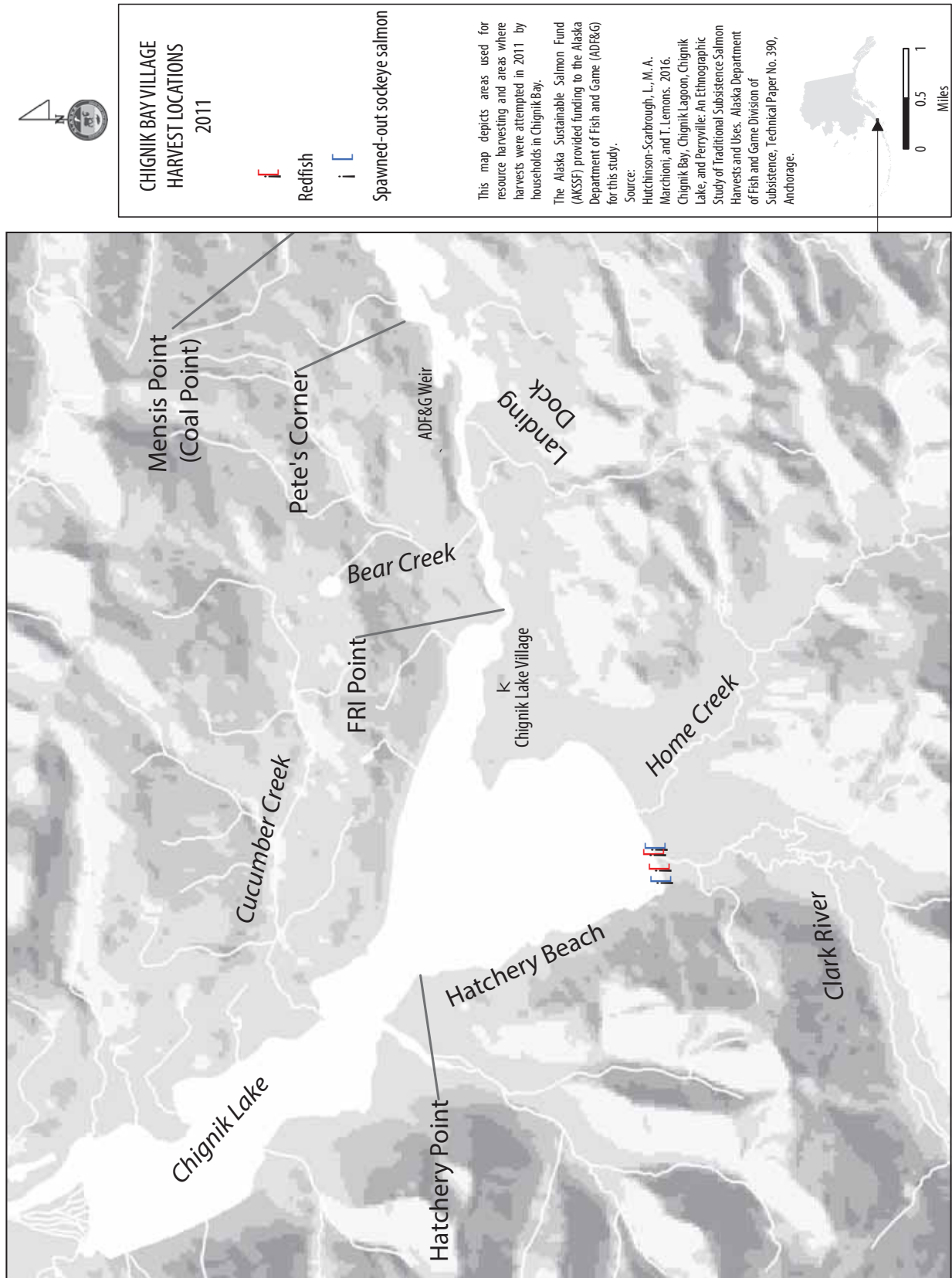
Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.108
Coho salmon	Individual	5.055
Chinook salmon	Individual	8.640
Pink salmon	Individual	2.325
Sockeye salmon	Individual	5.302
Spawning coho salmon	Individual	5.055
Spawning pink salmon	Individual	2.325
Spawning sockeye salmon	Individual	5.302

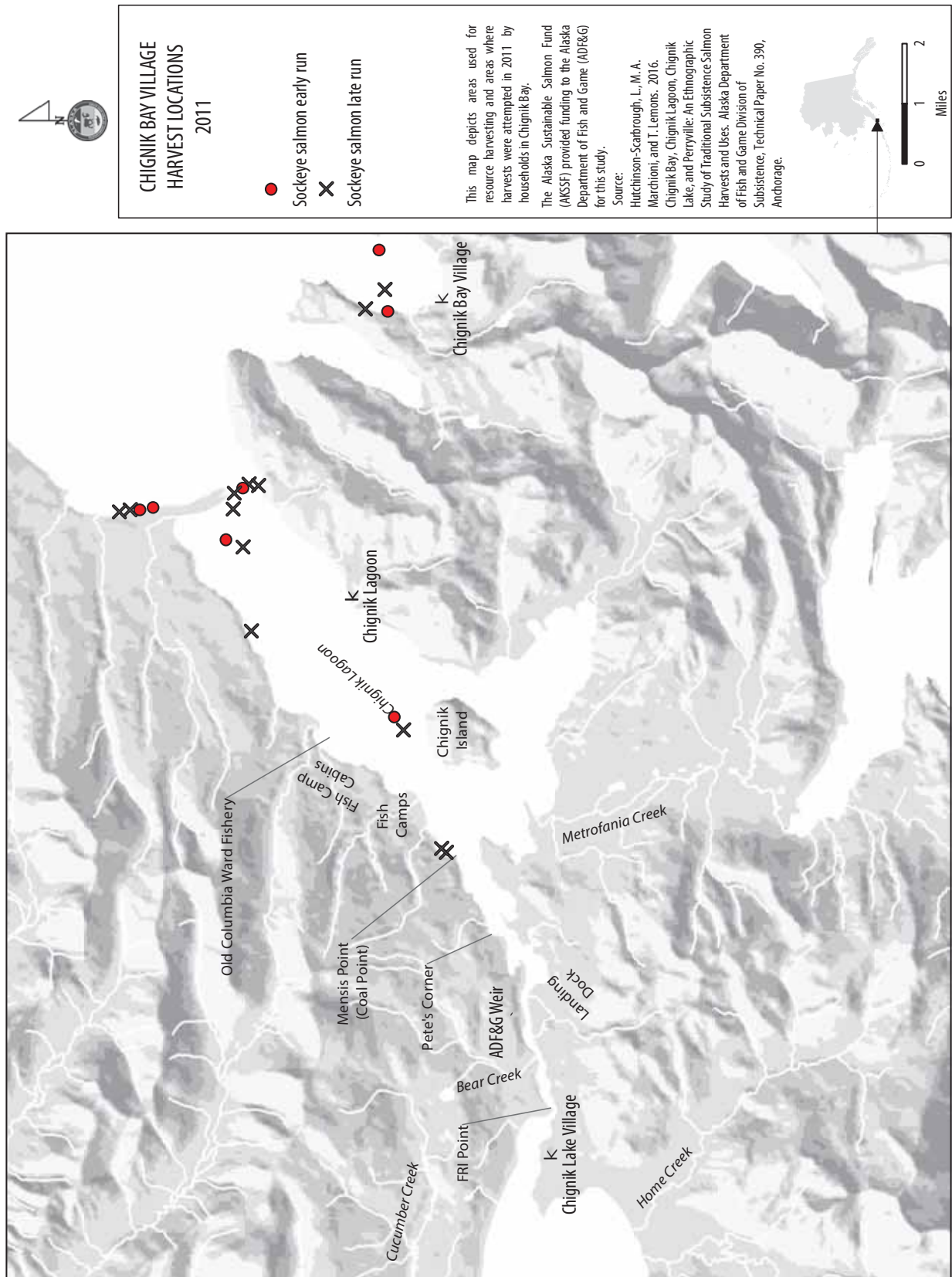
Source ADF&G Division of Subsistence household surveys, 2011.

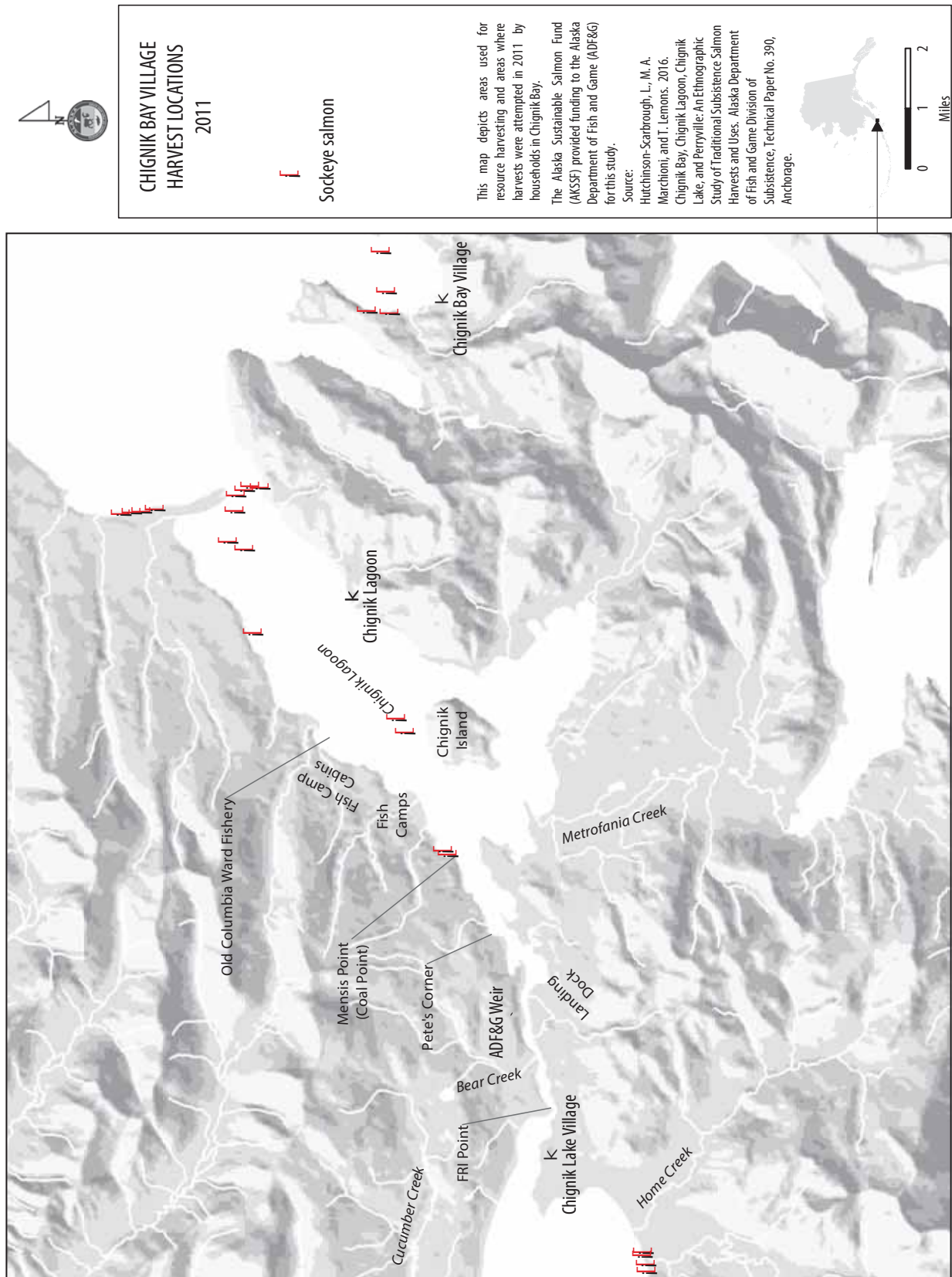
APPENDIX D—ADDITIONAL MAPS

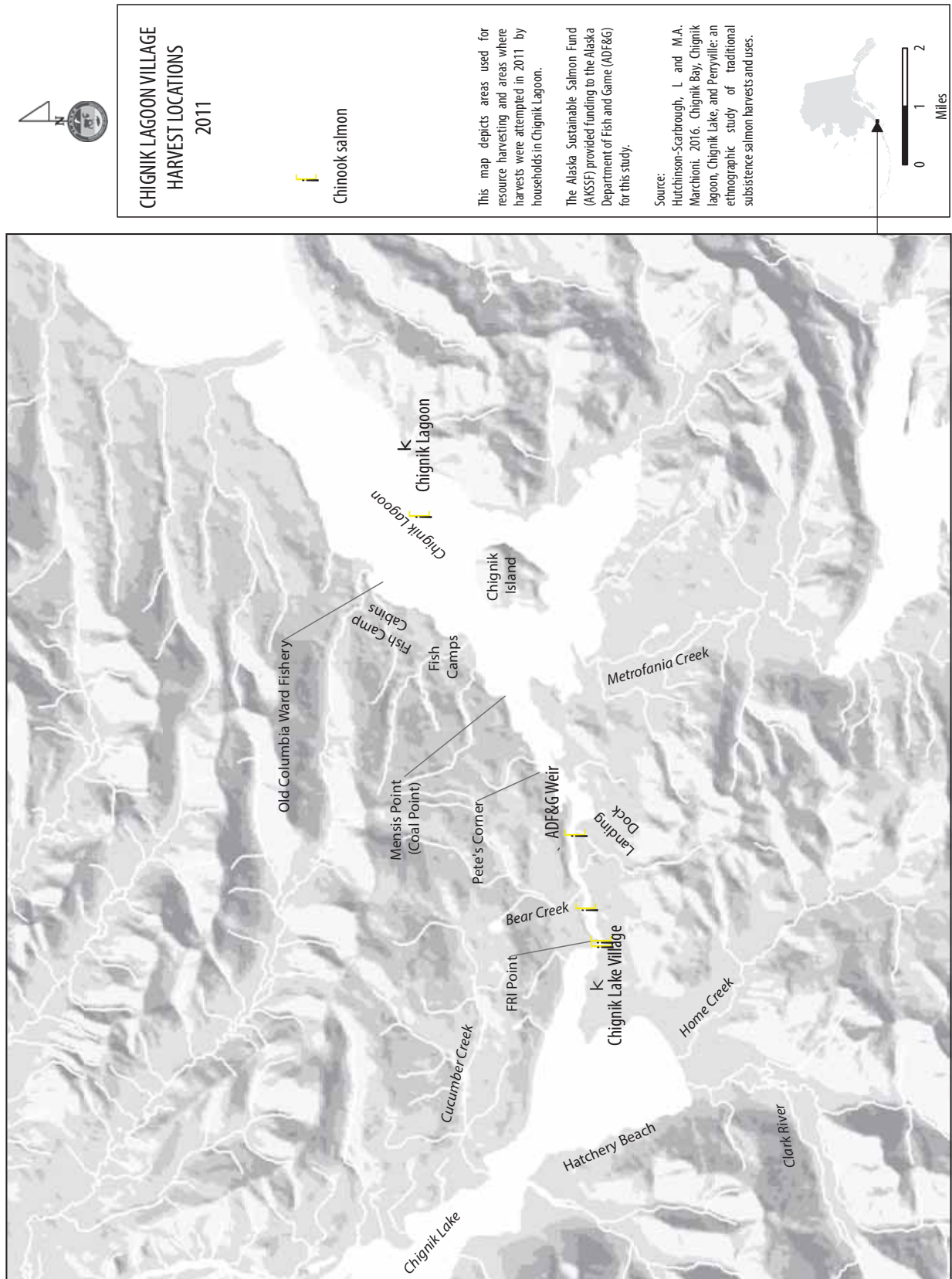


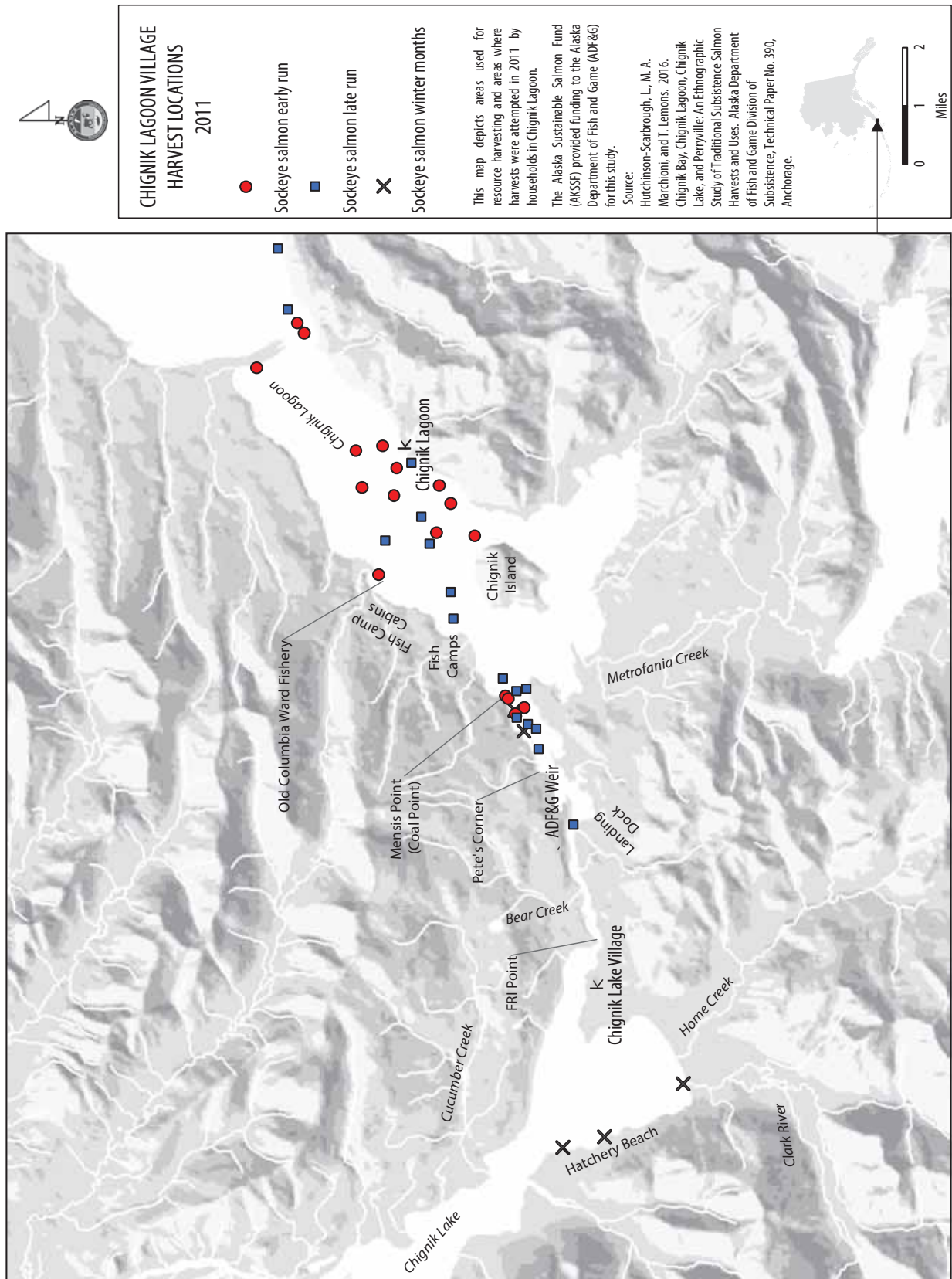


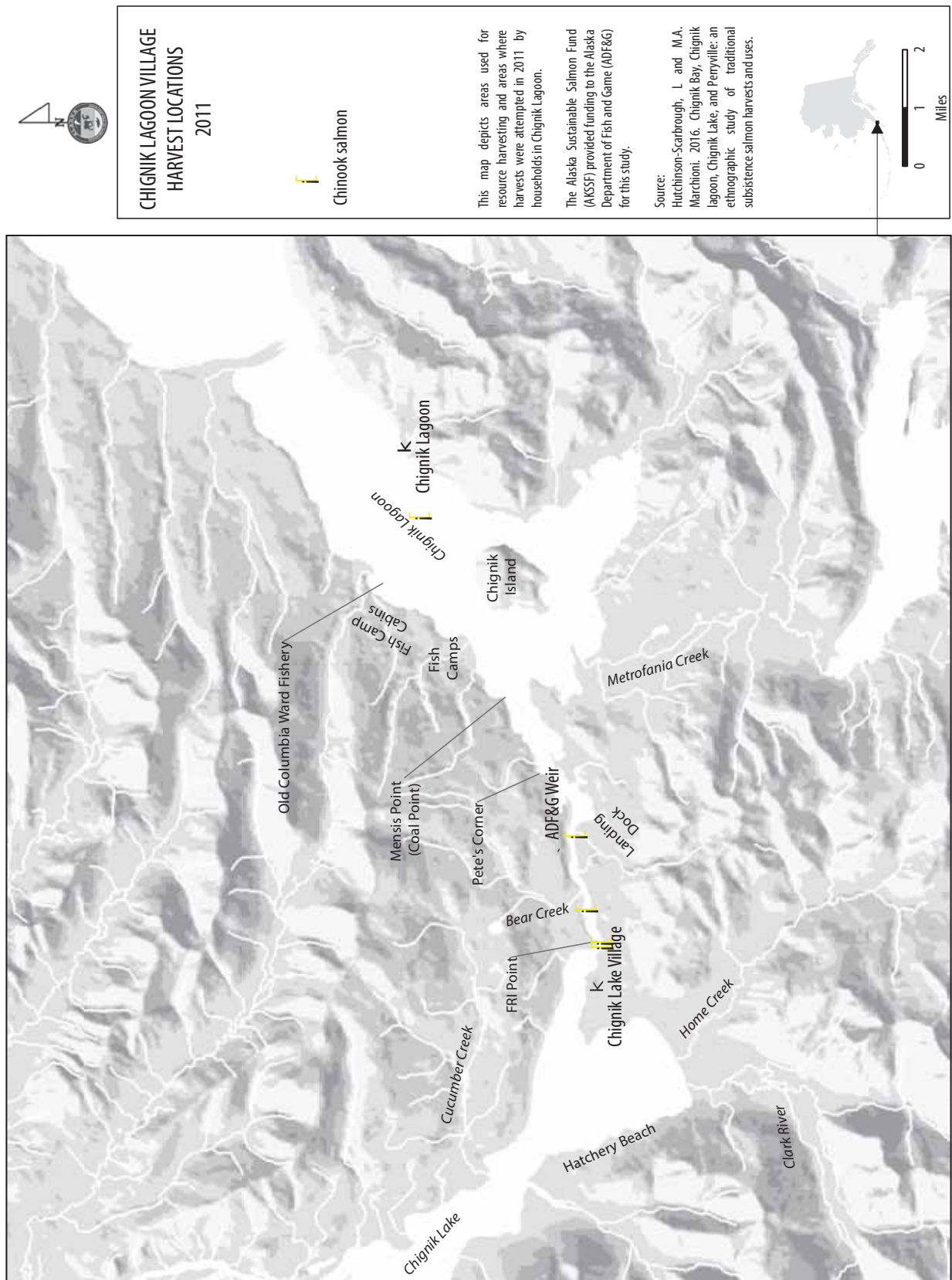


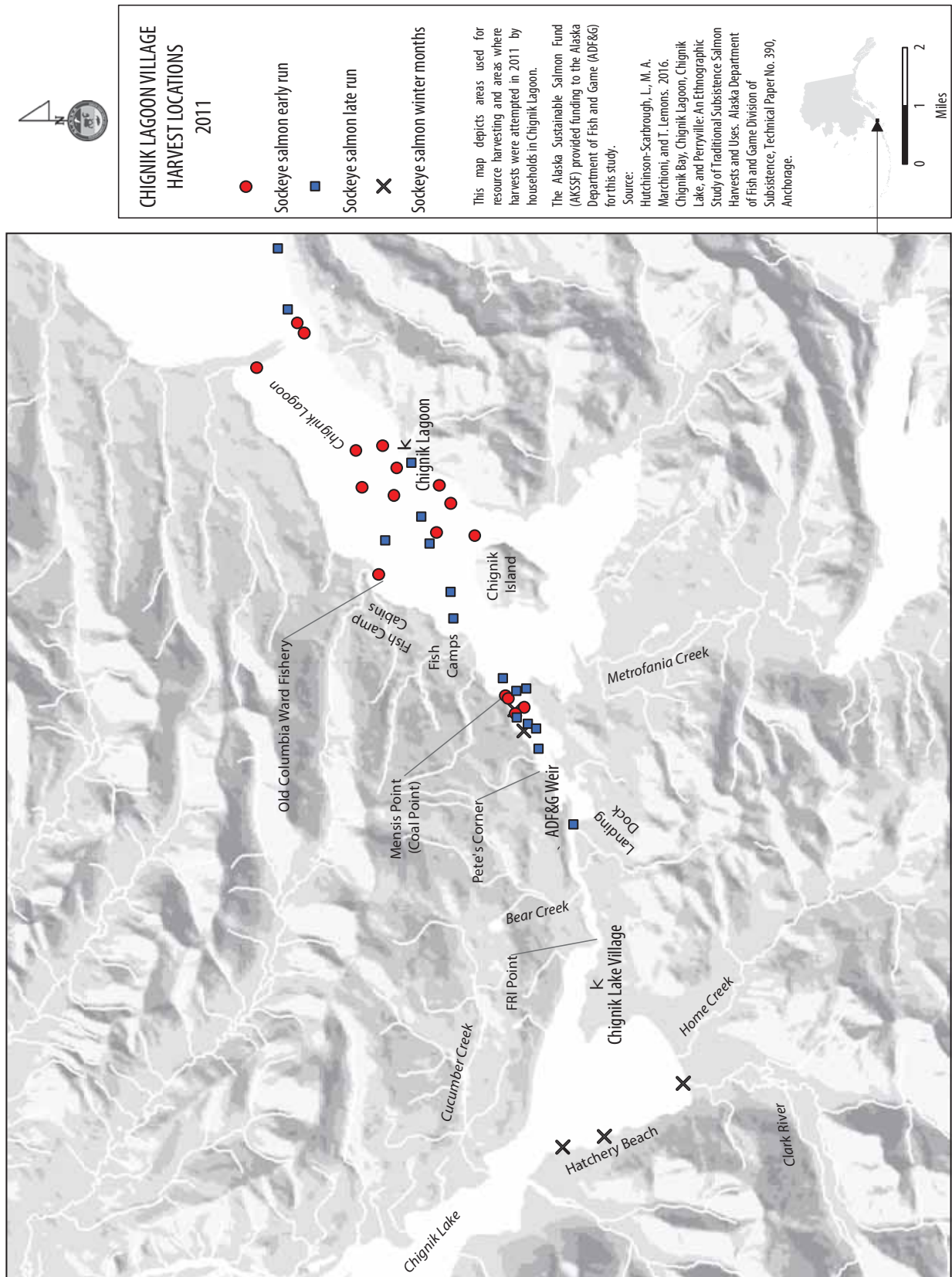


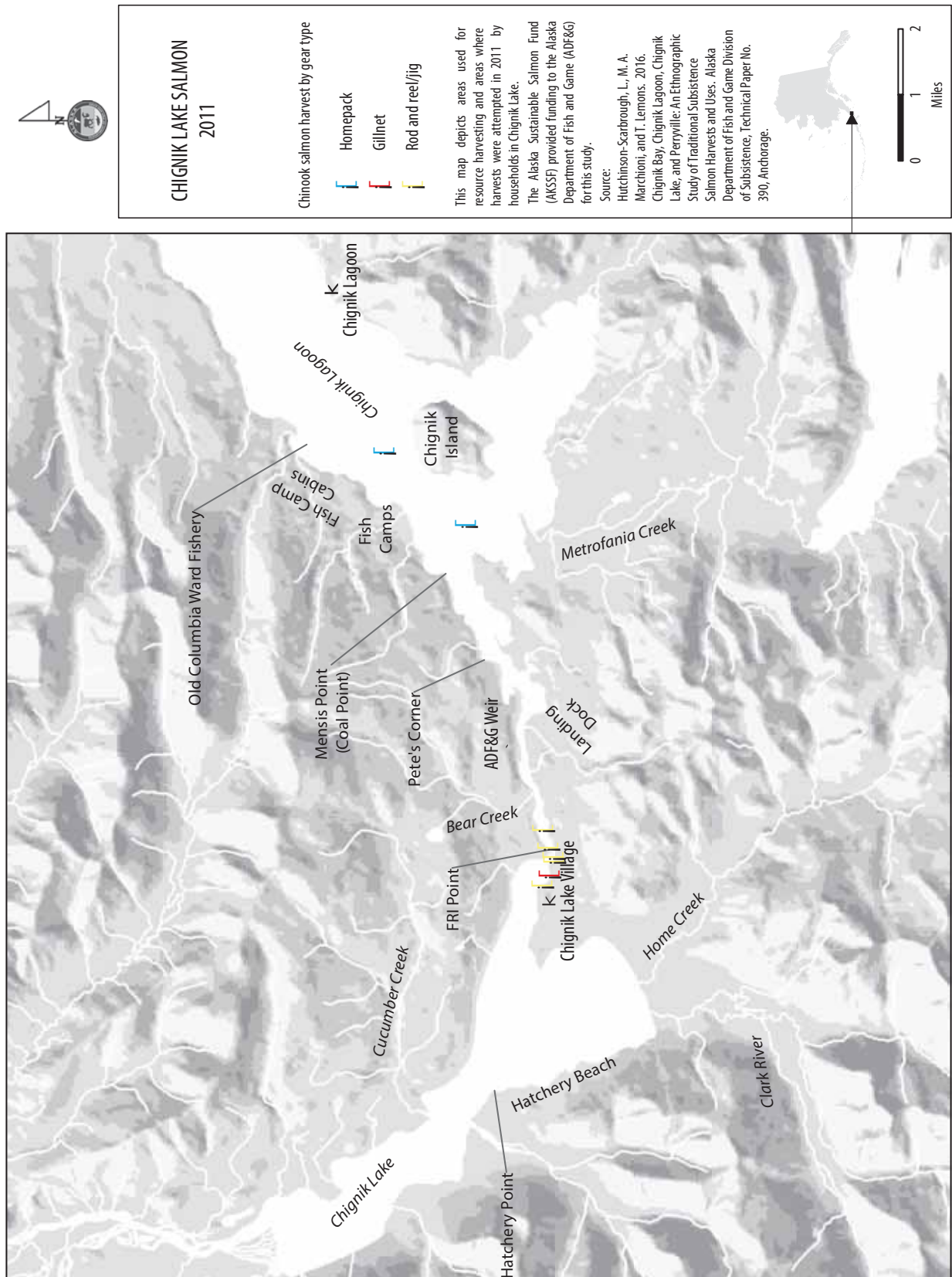


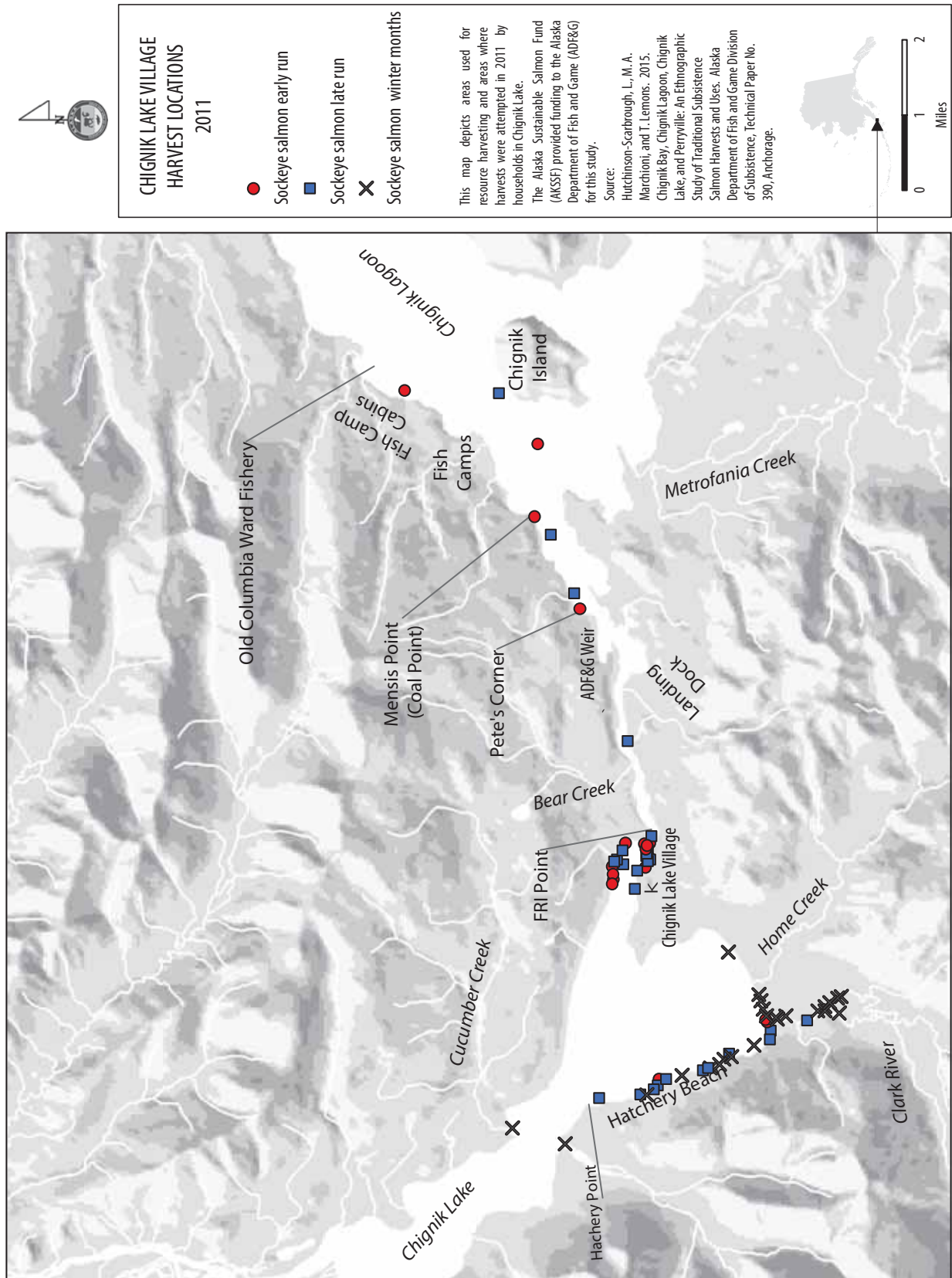


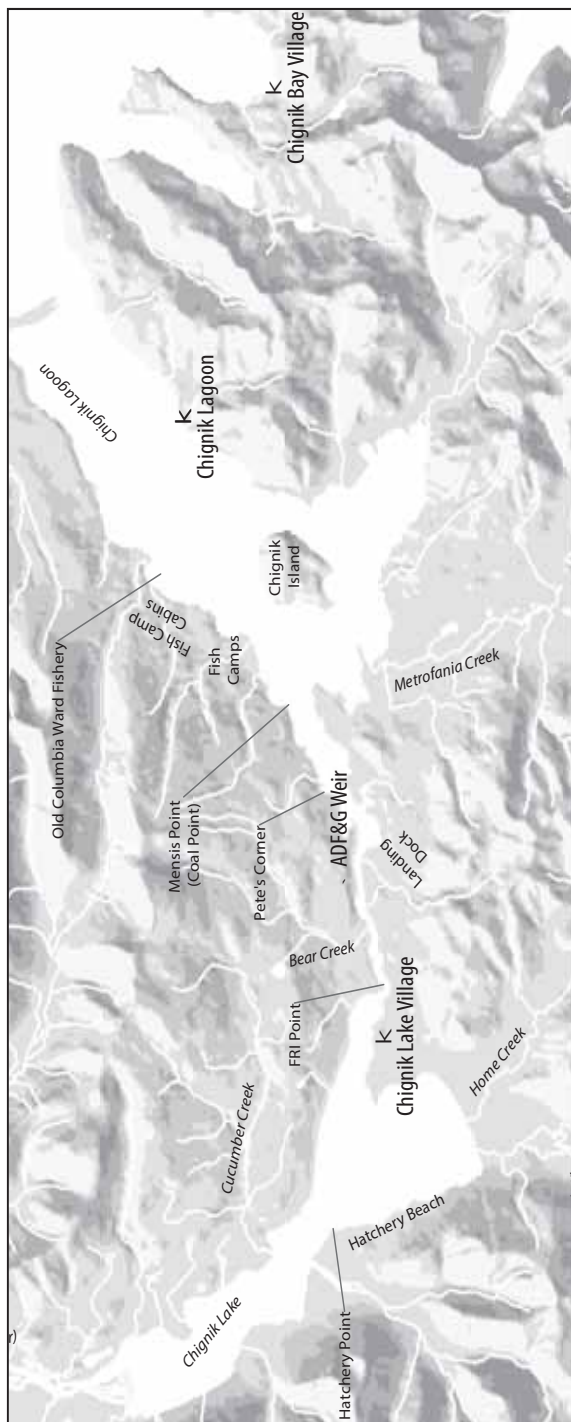












PERRYVILLE VILLAGE HARVEST LOCATIONS 2011

Chinook salmon harvest by gear type

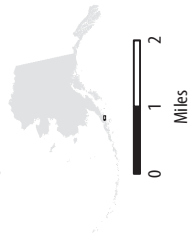
- f Gillnet
- f Rod and reel/jug

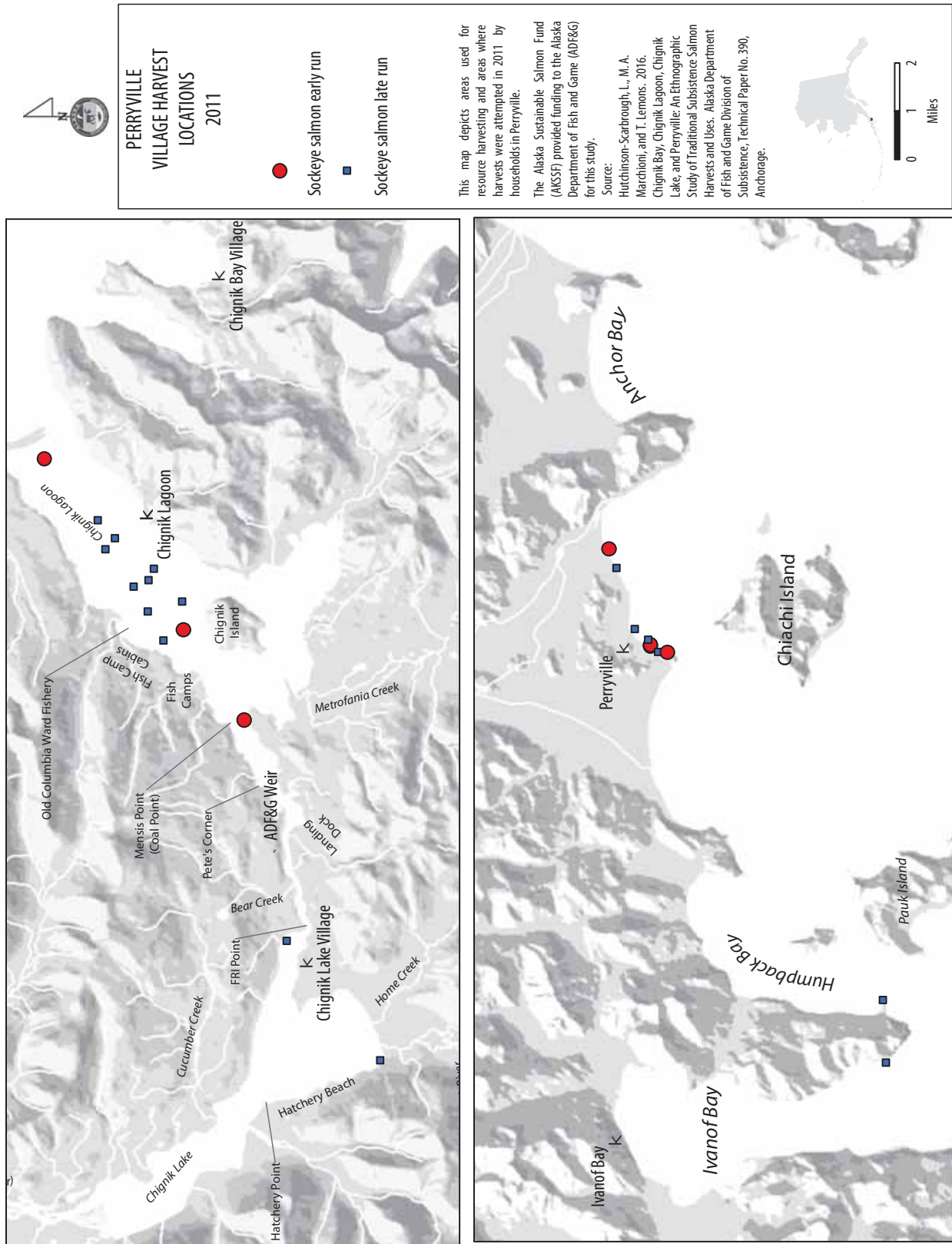
This map depicts areas used for resource harvesting and areas where harvests were attempted in 2011 by households in Perryville.

The Alaska Sustainable Salmon Fund (AKSSF) provided funding to the Alaska Department of Fish and Game (ADF&G) for this study.

Source:

Hutchinson-Scarborough, L. M. A. Marchioni, and T. Lemons. 2016. Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville: An Ethnographic Study of Traditional Subsistence Salmon Harvests and Uses. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 390, Anchorage.





APPENDIX E—LETTERS OF SUPPORT

Chignik Bay Tribal Council
P.O. Box 50
Chignik, Alaska 99564

RESOLUTION 2010-07

**A RESOLUTION SUPPORTING THE "CHIGNIK MANAGEMENT AREA
SUBSISTENCE SALMON FISHERY STUDY" SUBMITTED BY THE ADF&G
DIVISION OF SUBSISTENCE IN PARTNERSHIP WITH THE BRISTOL BAY NATIVE
ASSOCIATION PARTNERS FOR FISHERIES MONITORING PROGRAM**

WHEREAS, the Chignik Bay Tribal Council is the recognized tribal entity representing the Native community of Chignik in the Bristol Bay region; and

WHEREAS, the Bristol Bay Native Association (BBNA) is the regional non-profit consortium serving the tribal councils in the Bristol Bay region; and

WHEREAS, The Alaska Department of Fish and Game, Division of Subsistence's primary responsibility is to document subsistence uses, estimate subsistence harvest levels, and evaluate potential impacts to subsistence users from other uses.

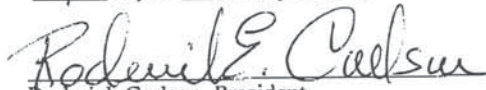
WHEREAS, the Chignik Bay Tribal Council recognizes that the subsistence harvest data for salmon in the Chignik Management Area has not been updated since 1990 and 1999 and should be updated to accurately reflect the subsistence harvests and uses of sockeye salmon in the communities of Chignik Bay, Chignik Lagoon, Chignik Lake and Perryville.

WHEREAS, the ADF&G Division of Subsistence has partnered with the BBNA Partners for Fisheries Monitoring Program to implement the "Chignik Management Area Subsistence Fishery Study" through funding from the Alaska Sustainable Salmon Fund.

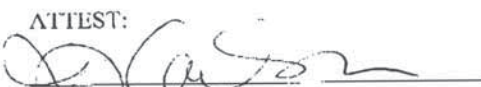
WHEREAS, the project proposal and research plan has been reviewed and approved by the Chignik Bay Tribal Council;

NOW, THEREFORE, BE IT RESOLVED that the Chignik Bay Tribal Council strongly supports the partnership and research necessary to conduct the project titled, "Chignik Management Area Subsistence Fishery Study".

Adopted by a duly called quorum of the Chignik Bay Tribal Council on this
1 day of June, 2010


Roderick Carlson, President

6-01-10
Date

ATTEST:

Jeanette Carlson, Secretary

6-01-10
Date

Chignik Lagoon Village Council
P.O. Box 57
Chignik Lagoon, Alaska 99565

RESOLUTION 2010-5/19

**A RESOLUTION SUPPORTING THE "CHIGNIK MANAGEMENT AREA
SUBSISTENCE SALMON FISHERY STUDY" SUBMITTED BY THE ADF&G
DIVISION OF SUBSISTENCE IN PARTNERSHIP WITH THE BRISTOL BAY NATIVE
ASSOCIATION PARTNERS FOR FISHERIES MONITORING PROGRAM**

WHEREAS, the Chignik Lagoon Village Council is the recognized tribal entity representing the Native community of Chignik Lagoon in the Bristol Bay region; and

WHEREAS, the Bristol Bay Native Association (BBNA) is the regional non-profit consortium serving the tribal councils in the Bristol Bay region; and

WHEREAS, The Alaska Department of Fish and Game, Division of Subsistence's primary responsibility is to document subsistence uses, estimate subsistence harvest levels, and evaluate potential impacts to subsistence users from other uses.

WHEREAS, the Chignik Lagoon Village Council recognizes that the subsistence harvest data for salmon in the Chignik Management Area has not been updated since 1990 and 1999 and should be updated to accurately reflect the subsistence harvests and uses of sockeye salmon in the communities of Chignik Bay, Chignik Lagoon, Chignik Lake and Perryville.

WHEREAS, the ADF&G Division of Subsistence has partnered with the BBNA Partners for Fisheries Monitoring Program to implement the "*Chignik Management Area Subsistence Fishery Study*" through funding from the Alaska Sustainable Salmon Fund.

WHEREAS, the project proposal and research plan has been reviewed and approved by the Chignik Lagoon Village Council;

NOW, THEREFORE, BE IT RESOLVED that the Chignik Lagoon Village Council strongly supports the partnership and research necessary to conduct the project titled, "*Chignik Management Area Subsistence Fishery Study*".

Adopted by a duly called quorum of the Chignik Lagoon Village Council on this
19 day of May, 2010

Clemens Grunert
Clemens Grunert, President

5-19-10
Date

ATTEST:
Nancy D. Anderson
Nancy Anderson, Secretary

5-19-10
Date

Chignik Lake Traditional Council

P.O. Box 33

Chignik Lake, Alaska 99548

RESOLUTION 2010-____

**A RESOLUTION SUPPORTING THE "CHIGNIK MANAGEMENT AREA
SUBSISTENCE SALMON FISHERY STUDY" SUBMITTED BY THE ADF&G
DIVISION OF SUBSISTENCE IN PARTNERSHIP WITH THE BRISTOL BAY NATIVE
ASSOCIATION PARTNERS FOR FISHERIES MONITORING PROGRAM**

WHEREAS, the Chignik Lake Traditional Council is the recognized tribal entity representing the Native community of Chignik Lake in the Bristol Bay region; and

WHEREAS, the Bristol Bay Native Association (BBNA) is the regional non-profit consortium serving the tribal councils in the Bristol Bay region; and

WHEREAS, The Alaska Department of Fish and Game, Division of Subsistence's primary responsibility is to document subsistence uses, estimate subsistence harvest levels, and evaluate potential impacts to subsistence users from other uses.

WHEREAS, the Chignik Lake Traditional Council recognizes that the subsistence harvest data for salmon in the Chignik Management Area has not been updated since 1990 and 1999 and should be updated to accurately reflect the subsistence harvests and uses of sockeye salmon in the communities of Chignik Bay, Chignik Lagoon, Chignik Lake and Perryville.

WHEREAS, the ADF&G Division of Subsistence has partnered with the BBNA Partners for Fisheries Monitoring Program to implement the "*Chignik Management Area Subsistence Fishery Study*" through funding from the Alaska Sustainable Salmon Fund.

WHEREAS, the project proposal and research plan has been reviewed and approved by the Chignik Lake Traditional Council;

NOW, THEREFORE, BE IT RESOLVED that the Chignik Lake Traditional Council strongly supports the partnership and research necessary to conduct the project titled, "*Chignik Management Area Subsistence Fishery Study*".

Adopted by a duly called quorum of the Chignik Lake Traditional Council on this

20 day of MAY, 2010

John Lind, President

5/20/2010
Date

ATTEST:

Nina Garner, Secretary

Date

Native Village of Perryville
P.O. Box 101
Perryville, Alaska 99648

2012-01
RESOLUTION ~~2010~~_____

**A RESOLUTION SUPPORTING THE "CHIGNIK MANAGEMENT AREA
SUBSISTENCE SALMON FISHERY STUDY" SUBMITTED BY THE ADF&G
DIVISION OF SUBSISTENCE IN PARTNERSHIP WITH THE BRISTOL BAY NATIVE
ASSOCIATION PARTNERS FOR FISHERIES MONITORING PROGRAM**

WHEREAS, the Native Village of Perryville is the recognized tribal entity representing the Native community of Perryville in the Bristol Bay region; and

WHEREAS, the Bristol Bay Native Association (BBNA) is the regional non-profit consortium serving the tribal councils in the Bristol Bay region; and

WHEREAS, The Alaska Department of Fish and Game, Division of Subsistence's primary responsibility is to document subsistence uses, estimate subsistence harvest levels, and evaluate potential impacts to subsistence users from other uses.

WHEREAS, the Native Village of Perryville recognizes that the subsistence harvest data for salmon in the Chignik Management Area has not been updated since 1990 and 1999 and should be updated to accurately reflect the subsistence harvests and uses of sockeye salmon in the communities of Chignik Bay, Chignik Lagoon, Chignik Lake and Perryville.

WHEREAS, the ADF&G Division of Subsistence has partnered with the BBNA Partners for Fisheries Monitoring Program to implement the "*Chignik Management Area Subsistence Fishery Study*" through funding from the Alaska Sustainable Salmon Fund.

WHEREAS, the project proposal and research plan has been reviewed and approved by the Native Village of Perryville;

NOW, THEREFORE, BE IT RESOLVED that the Native Village of Perryville strongly supports the partnership and research necessary to conduct the project titled, "*Chignik Management Area Subsistence Fishery Study*".


Adopted by a duly called quorum of the Native Village of Perryville on this

17th day of February, ~~2010~~
2012


Gerald Kosbruk, President

2/17/12
Date

ATTEST:


Johnathan Kosbruk
Council member

2/17/12
Date